SECULAR IMMORTAL

By

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Abstract

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An in-depth study of groups in the United States trying to achieve immortality or radically extended lives through cryonics, biogerontology and artificial intelligence, this ethnography defines *Immortalism* as an active commitment to transcending through technology the limitations that bring about the biological end of a person. Although long life and avoidance of death are considered universal ideals, Immortalism's imaginaries, practices and subjectivities have been shaped by a contingent confluence of American histories and specific techno-utopian practices and assumptions about life, death and personhood.

The research identifies four key dispositions assumed in immortalist practices, concepts and ideologies: i/ techno-utopian orientations towards the future in which human problems are solved not through socio-political rearrangements but the rearrangement of matter by biotechnology and the informatic sciences; ii/ shifts in secular temporality to counter the sense of human life (individual and species) as a finite, incomplete and purposeless trajectory; iii/ understandings of personal identity in terms of information, producing an "informatic self", a self understood, managed, preserved and improved via the notion of information through strategies like cryopreservation or mind-uploading; iv/ the further use of "information" as a *transontological* concept bridging numerous domains to construct "informatic cosmologies" that portend to address the issue of universal purpose.

The broader analysis engages largely ignored tensions between science and the secular, which are overlapping but not coterminous domains. The encounter between Immortalism and the institutions of law and science highlights the inability of secular epistemology (mainly scientific materialism) to fix key metaphysical categories such as

personhood, life and death, on which secular politics depends. This points to a general sense of existential fragility that has shaped secular life-death regimes. Immortalism's appeal is partly related to the possibility of addressing such existential issues, but from within the domain of science. Their worldview, however, extends beyond these groups to the information sciences - especially the vanguard of the NBIC (Nano, Bio, Info, Cogno) convergence, which share key actors with immortalists and other futurists.

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PREAMBLE

From a conversation with an Immortalist[1]

- *Living is good. Being alive is good. So more of it is good.*
- *What's good about it?*
- *Love. [Laughs] Yeah love, that's it. [Pause] Well, maybe life is not good. Maybe that's what the Buddha was trying to say. Maybe I should just stop right now and go to a Zen Buddhist retreat and try to extinguish myself without suicide.*
- *Well, logically one would have to say that life is not good, which is why we are trying to improve it.*
- *Yeah, yeah life absolutely sucks. No disagreement with that. Life sucks. But as long as there's tomorrow, tomorrow has the potential to be better than today and even if life got suckier and continued to suck for a long long long time, as long as I thought there was light at the end of the tunnel, I'd want to keep going. But if there was ever a point where I thought there was no light at the end of the tunnel, and things are just going to keep sucking and get worse and worse, then would I still be an immortalist? Maybe, I don't know.*

[1] I use the term Immortalism to describe the movement that is the primary object of my analysis. I will later justify the use of this term.

INTRODUCTION

The Immortality Institute

Until that day in the motel in Plainville, Connecticut, I'd never really met a group of Immortalists, not in person, face to face, life to life, body to body, though I'd met them on-line, one might say persona to persona, maybe even mind to mind.

The Ramada Inn in Plainville is your basic small town hotel-slash-motel in the Northeast, right off a highway exit, just before Main Street, a long, narrow four story building at the far end of a parking lot the size of two football fields. It's the kind of hotel that turns its generally dim, unoccupied restaurant/bar, called *Crooked Street Station*, into a Saturday night disco for local guys with souped up engines and dolled up girlfriends who cup their colorful cocktails like gourds of magic potion warding off who knows what stripe of fear. The carpets are faded, the towels are frayed and the old ice machine down the hall whirrs a little too loud. It was not the kind of place I had imagined. I was expecting a Sheraton convention center, at least some sort of conference facility, something anaesthetized and affluent enough to fit what I imagined should be the home of the first semi-official meeting of The Immortality Institute.

In the lobby, I come across people I know from the web. Seven or eight of us have arrived at just about the same time, 3 p.m. on a mild Saturday in early December 2004, and most of us don't know each other, except by our usernames, by pre-facebook era identifiers like "Lazarus" and "Osiris" and "Reason" and "Mind" and "Caliban" and "Bill O'Rights". That was one my first lessons in Immortalism: symbolism matters.

Some of those present I recognize from their 72 dpi pictures on the discussion board IDs. Others are faces waiting to be matched to names of some sort, any sort. People introduce

themselves by their real names and that creates an awkward lag, while we put faces on usernames and then real names back on to those same faces. The double adjustment takes a while. In fact, it takes all night, as members continue to call each other by their usernames. When you write passionate emails every day about life and death to Lazarus, Osiris and Reason, it's hard to suddenly call them Ted or Jamie or Chris.

Entering the hotel, Lazarus enthuses in his big, eager voice: "I saw Bill O'Rights' car outside. The big red one. I recognize it from one of his posts. He must be here. Is that his car?"

Bill O'Rights is actually standing right there next to him. But he doesn't introduce himself, doesn't say, "That's me" or "Yeah, it's mine". It's as though he wants to let his souped up red roadster be his identifier. In real, material presence, it beats the username thumbnail photo.

Caliban, the German bio-ethicist, assumes his organizing role immediately. He tactfully gestures to Bill the human being.

"This is Bill," he says. "He is right here."

"Oh, hi Bill," says Lazarus.

Bill O'Rights has a big diamond-studded cross on a hefty chain swinging down from a white hooded sweat top. His white, shaven head gleams, as polished as his car. Always polished and very red, the car's a "Charger" with an engine the size of a plane's and two giant speakers that take up the entire rear of the car. I don't know what kind of music he listens to – except obviously the loud kind - but his look says hip-hop while his car says hard rock. Some people said he had largely paid for the cost of the gathering at the motel. The rumor was whispered because it was not clear how, or even why, O'Rights would do this. Bill O'Rights, who was as knowledgeable about supplements and the US constitution as anyone, would go on to become

increasingly intriguing over the years: after disappearing for a short stint, he showed up in prison, taken in on drug-related charges, then, after his release, succumbed to a fatal illness. He had no money to pay for a cryonics policy in order to cryopreserve his body upon death – which would preserve it in liquid nitrogen, committing it to the expected brilliance of future science to revive and cure. The Immortalist community banded together on-line to collect the necessary funds for O'Rights' cryopreservation.

None of these gestures or identities was what I expected at a gathering of the members of the Immortality Institute. Indeed, from the venue to the people, virtually everything I expected of this movement keeps getting upended.

But then again, what might one expect from people who seek scientific means to gain immortality? From members of an organization whose motto is "Conquering the blight of involuntary death"? From a group – one amongst many – that has formed around the *scientific* possibility of not dying? Of people who are activists of extended life, seeing a near future brought about by bio- and nano-technology in which we will be living as close to forever as we can imagine?

What people do think or say about them – that they're nuts, weirdos, scam artists, godless fools, devils, immoral and selfish extremists – is a major pre-occupation. I had been introduced to the personal depth of this pre-occupation earlier that morning when I went to meet my ride in Hoboken, NJ. A biology student, S. R., and I were being driven up to Connecticut in Randy's truck. Randy is an old-time gay activist, who is into cloning as a method of survival, his preferred form of non-sexual reproduction and continuity. He called it immortality through cloning. He was there for Stonewall and now he is proud to be the world's first cloning activist, heckling bio-ethicists at conferences and getting interviewed on TV. As we walked to the truck,

S. R.'s phone rang. It was apparently a friend trying to get together for the weekend. S.R. used to be a real estate assessor. He couldn't stand his job and was smarter than the job required. He'd finish two hours early and spend the rest of the time reading science books and magazines under the table. That's how he came across such topics as nanotechnology and immortality, by reading a science magazine, like a great majority of Immortalists and Cryonicists. He saw the light, decided to quit his job, lose the salary and go to school again at Montclair to study molecular biology. He joined the Immortality Institute and became one of the forum coordinators on the web. He's young and intense, and his girlfriend, who did not join us, was an English major. Once, they promised each other to exchange books in their respective fields, since he doesn't read anything but science and she doesn't read anything but fiction. He gave her Dawkins, she gave him Harry Potter. Neither managed to get through to the end of the other's gift. While we waited for him in the car, S.R. tried to get off the phone gracefully, telling his friend that he had to go. His friend on the other side obviously asked him where he was going.

S.R. answered, "Going up to Connecticut for a meeting... Yeah, my web-site is having a meeting." Not the Immortality Institute, not my organization, but *my web-site.*

His friend must have been inquisitive, asking for a little more detail, because S.R. then said, "Oh, science and biology, you know, it's a social gathering."

The fear of mentioning one's connection to Immortalism in general, or specifically to cryonics, is common. The repercussions are not just verbal and emotional. A number of people have given me accounts of being professionally ostracized when they discussed their involvements. Many doctors who are cryonicists do not mention these words in the office; even biotech researchers, cryobiologists and tech workers often don't bring up life extension; the Society for Cryobiology has barred members from involvement in cryoncis research.

Today, as the ideas behind the movements gain backers, some credibility and more visibility, the impulse to hide has started to wane. In Connecticut five years ago, the self-consciousness was still very much there. What do people think when they hear the word "immortality"? What about the name "Immortality Institute"? What, for example, did the people at the front desk of the Ramada Inn think when they booked rooms for an "Immortality conference" organized by the "Immortality Institute"?

BJ points two fingers over his head like the devil and makes as though he's addressing the receptionists. "See, we don't have horns," he jokes and everyone laughs.

The receptionists, it turned out when I asked them, didn't think much either way – as long as someone's booking rooms every once in a while, they're fine, they don't inquire beyond the spelling. "Immortality", with an I and double M. For all they cared, it may as well have been the Rotary Club. But BJ's joke works for the in-group anyway. It's like an inoculation against the outside world: everyone seems suddenly protected, more at ease. It's ok to be here because everyone's together now, not alone in their home communities where they often have to hide their affiliation to such practices as Cryonics or Immortalism research. There's strength in numbers. They tape signs near the elevator, announcing "Immortality Institute Meeting, 4th floor".

The fourth floor has a suite with a round, chipped table, stained sofa and a coffee machine. Once an undersized cover is thrown over the table to conceal its blemishes, this becomes the conference room. The gathering feels a little bit like what I imagine an underground socialist meeting from the 1950s might have been like. And certainly the predominant feeling around the airless room is of something clandestine, radical, marginal, socially unacceptable and underfunded. This is not the image I had either. This is not the community of wealthy, hubristic

pharaoh-men who have found another way to immortalize themselves at a cost only they can afford. It is not the community of well-heeled, institutionally supported hi-tech scientists. It is just some committed people who share a vision that death is unnecessary and want to do something about it.

The group is almost all white, middle class and male. The exceptions are the Latina half of one of two couples present, and the Portuguese girlfriend of one of the scientists. There are two scientists in the room, one a researcher at Harvard, the other at a private bio-tech company in search of a cure for the flu. An Anglo-German bio-ethicist is the secretary of the group, and mocking his own "Achtung achtung" Germanness, keeps the discussion organized and confined to the allotted time. The others are designers, students, teachers, small business owners and the gay activist from Hoboken, Randy. The ages range from late 20s to late 60s, young to aged.

The discussions that ran passionately through the night were mainly procedural – how to phrase the mission of the institute, how to improve the forum, and expand it, how to get more people, and more prominent people, to think about the topic or take it seriously. How and where, for example, should a conference be organized and who should be invited to speak? Names from the Immortalist pantheon, like Aubrey de Grey, Eric Drexler, Ralph Merkle, Ray Kurzweil, flashed across the room. Topics from Calorie Restriction to Biogerontology to Cryonics funding to Artificial Intelligence and Mind Uploading were proposed.

But these practical matters also implied social and political issues, which clearly placed the Immortality Institute in the midst of turbulent historical and political currents. How can one talk about immortality without evoking a long history of yearning and myth and Christian tradition? How do you remain secular in this realm? Perhaps the word immortality should be changed? Perhaps the word is attracting too much negative attention? What can one do to

counter the Chrsitian and luddite resistance, the publicized attacks of people like the bioethicist Leon Kass (then the chair of the President's Council on Bioethics) or the journalist Bill Mckibben (who had recently published a book against radical technological alterations of human biological nature)? Immortalists present felt besieged, surrounded by hostile forces, hampered by government regulation and religious atavism as well as by narrow-minded scientists who simply labeled the venture impossible, the interests of "big pharma" (which did not want cures for anything), academic sluggishness and traditional thinking in general – in effect, by the culture at large, which they called a "Deathist culture". It would take concerted, programmatic effort to overcome the assumptions and habits of such a culture. That would be the task of the Immortality Institute.

So here, in a dingy suite on the 4th floor of the Ramada Inn, Plainville, CT, 15 people, gathered for the first ever meeting of the Immortality Institute, were developing ways to navigate the unknown, treacherous waters, to rage against the "deathist culture" around them.

A year and a half later, the Immortality Institute's first official conference in Atlanta, GA, attracted 150 people. The attendees included researchers from prestigious institutions, engineers, doctors, journalists, and academics. Amongst the speakers were Michael Rose, a professor in the Department of Ecology and Evolutionary Biology at the School of Biological Sciences, University of California, Irvine, and author of the book '*Evolutionary Biology of Aging* (1991); Ralph Merkle, professor of computer science at Georgia Tech College of Computing; Aubrey de Grey, an engineer and gerontologist at Cambridge University, who was developing a series of strategies to defeat aging through molecular biology and has been recently vilified in a cover article in the MIT Tech Journal; James Hughes, a sociologist at Trinity College, who is a Buddhist, an eco-socialist, and executive director of the World Transhumanist Association;

Martine Rothblatt, a cross-gender inventor, writer, lawyer, activist, who launched the first satellite-to-car radio company (Sirius) as well as the first nationwide vehicle geo-location system (Geostar), led the International Bar Association's project to develop a draft Human Genome Treaty for the United Nations, founded and runs the biotech company United Therapeautics, and still managed to find time to write books with titles like *The Apartheid of Sex* and *Unzipped Genes*, and start a non-profit organization called Terasem, dedicated to joyful immortality and geo-ethical nanotechnology; Eliezer Yudkowski, co-founder of the Singularity Institute; and Ben Best, the current director of the Cryonics Institute. The conference was chaired by Bruce Klein, founder of the Immortality Institute, who would soon join forces on the West Coast, in Silicon Valley to be precise, with one of the speakers, Ben Goertzel, an Artificial Intelligence (AI) researcher with a son named Zarathustra, to lead an attempt to build *real AI*, in part as a means towards establishing the immortality of the mind.

The list of speakers demonstrated the range of fields or groups involved in this emerging network of people committed to the idea of scientific immortality: computer science and artificial intelligence, transhumanism, molecular biology, nanotechnology, gerontology, cryonics, even cloning. Many of the speakers already knew each other, or already knew of each other, meaning that the overlap of interests, ideas and practices between, say, nanotechnology, cryonics, artificial intelligence and transhumanism had long been discussed and sometimes put into practice. But the Immortality Institute had provided a common roof for a wide multi-disciplinary gathering, where institutional researchers met and exchanged valuable information with Do It Yourself researchers.

The list of speakers also demonstrated what the Immortality Institute members, in their fledgling local meetings in motels around the country, had been convinced of: it was time to

make of their interests a movement, to collect the various strands, make it grow. The list of speakers showed they had, to some extent, succeeded. This was no little patchwork of random people meeting in the dark over a stained tablecloth. It wasn't at a glitzy Sheraton conference center that housed, say, the Atlanta-headquartered CNN conferences, but compared to the Ramada Inn, Plainville, Connecticut, this could be classified a few rungs up, with a roster of impressive people. The confluence of interests technical, financial and political, would develop a network of experts and organizations that have come to define Immortalism's three principle, interwoven strands: Cryonics, biogerontology and Artificial Intelligence.

From that first main conference onwards, Immortalism, or Radical Life Extension (RLE), as many within these groups prefer to call it, would slowly gain more mainstream visibility, gain more members and find its way into more mainstream media as well as established scientific settings. Bruce Klein and Ben Goertzel would join forces with Yudkowsky's Singularity Institute, along with celebrity futurist Ray Kurzweil and a number of Silicon Valley players, including one of the founding investors of facebook. The Singularity Institute would set up a hybrid university at NASA and host annual summits attended by luminaries in biotechnology, philosophy and neuroscience. Aubrey de Grey would quickly rise to become the most visible star in the Immortalist firmament, running the Methuselah Foundation and appearing on countless magazine covers, in a Barbara Walters special, and, perhaps most importantly for the movement's sense of credibility and vindication, at a number of speaking engagements at established scientific institutions, including the prestigious New York Academy of Sciences. Serious articles on topics such as cryopreservation, calorie restriction, and cyberimmortality would appear in magazines and papers from The New York Times and The New Yorker to Rolling Stone. National Geographic, Oprah and 60 Minutes would air television programs on life

extension strategies, including conversations with Immortalists and the exploration of Cryonics as well as Calorie Restriction. Cyberimmortality, Kurzweil, and the Singularity would appear as cover stories in Rolling Stone and Time Magazine as well as many others.

These developments trigger two questions, one emic, one etic. The etic question is: How and why did Immortalism, a set of ideas and practices that four or five years ago was synonymous with scandal, cults, sci-fi and fringe science, grow in numbers and credibility? What social conditions enabled this? Why, for example, would anybody want to be frozen after they're already dead? or get uploaded to a computer, even if it were possible? Even if it were possible, who really wants to extend their life forever? And why? After all, hasn't death been the key universal feature of a natural human existence? Isn't death a necessary part of biological life? Doesn't life become meaningless without death?

Immortalists themselves are actually surprised and pre-occupied by the opposite question, the emic question. Looking out from the inside, they ask, "Why has it not grown more?" In a culture, supposedly obsessed with health and youth and longevity, why haven't more people jumped on the immortalist bandwagon? Doesn't everyone want to live longer, healthier lives? Is it not rational and urgent to defeat death? Is it not natural to avoid death? Is the survival instinct not universal?

Both the emic and etic quandaries are grounded in common but conflicting assumptions of universality regarding death – one presumes that death is universal and necessary; the other that the desire to defeat death is universal and necessary. As I will try to show, neither death nor the desire to avoid death can be regarded in abstract, universal terms. It is always a particular form of death that is imagined, desired or dismissed; a particular form of life that is experienced, saved or extended.

Far from being universal, Immortalism's projection of a supposedly universal desire to live indefinitely long lives is shaped by its own specific past and future imaginaries, its practices, techniques and ideologies, by a local, contingent confluence of histories and a set of specific assumptions and ideas about life and death. The desire to live indefinitely long lives cannot be taken as an abstract idea imputed to humans as such. Rather, radical human life extension, as a social movement and as a technical possibility, must be viewed along the lines of Hannah Landecker's view of cellular immortality in the lab, as "a set of specific technical interventions in physical matter that resulted in a material form for this concept of biological infinitude" (Landecker 2003:70). In this case, it involves specific techniques in cryonics, in biogerontology and in artificial intelligence that turn long life into certain kinds of long life, of extra-biological infinitude – for example, life as a disembodied piece of software, or life as a result of revival into an unknown world after centuries of suspended animation in liquid nitrogen. Thus, importantly, the adherence to an immortalist ethos is dependent on particular predictions and desires regarding the future of the world, the possibilities of science and the role of technology in the nexus between life and death.

Similarly, the broader social rejection of contemporary Immortalism can not be simply taken as a non-rational response to death, or mystification regarding a universal desire to live on; nor is it about the natural or ontological necessity of death, or an effect of the universal meaningfulness of death, or some natural need to accept death. As the discussions and controversies swirling around Immortalism show, the current rejection of Immortalism has to do with the fact that most people do not share Immortalism's local history, its assumptions, associations, practices and politics, many of which can appear at times confusing, challenging, disorienting, even undesirable for reasons unrelated to any desire regarding death or life

extension alone. At other times, those assumptions and practices threaten many of the normative positions about life and death that have come to be accepted throughout much of contemporary American society, via a different, though related history – specifically the histories of death acceptance and the good death that have helped construct the idea that death is meaningful.

While I will treat each of these particular histories in detail, it is also important to not over-state the separation between Immortalists and the rest of American society or the global medical-scientific contexts, since Immortalism, far from being a marginal and isolated curiosity, is very much part of those contexts. Immortalism is a story about groups with a very American, DIY, sci-fi and science-based orientation, with roots in the futurism of the 60s and 70s, that were later hitched to a tech and biotech boom in hyperdrive, with immense economic growth and technical achievements, re-igniting a post-millenialist techno-utopian optimism that has constituted a major current through the course of American history, especially from the 19th century onwards. In recent years, the techno-optimistic ethos and the new futurist network of Immortalist, Transhumanist, Singularitarian organizations have extended their reach into mainstream academic, scientific and governmental institutions, from the NSF to NASA. Further, Immortalism must be viewed as part of a continuum – admittedly, a distinct part whose specific distinguishing aspects I will attempt to point out – or rather of *continuaa*, several continuous contexts and regimes that deal with medical and legal aspects of life and death. Immortalism is part of America's history of biomedicalization, of the convergence of the informatic sciences, of modern institutionalized attempts to manage death medically, psychologically and legally, and part of secular structures of reckoning, that is, of facing future prospects in terms of such notions as risk, survival, and purpose. Indeed, as I'll argue, a good part of the death acceptance (good death) and death rejection (Immortalism) movements are cut from the same cloth: they constitute

reactions to secular finitude, meaning the elimination of the afterlife and the proliferation of non-religious end-time scenarios. In other words, they must both be viewed within the framework of a contemporary, secular eschatology. Investigating the grounds and effects of that secular eschatology is one goal of this project.

Broadly considered, this project provides a description of two shifts (and their consequences) in the Western imagination: first the secular materialist elimination of the soul, the afterlife and a meaningful cosmos; second the reconfiguration of immortality, personal identity and a puposeful cosmos also through materialist and techno-scientific discourse and practices.

In general, the first story is relatively well-known – it starts with the enlightenment, picks up steam through the scientific revolution and reaches its apex between the late 19th century and the mid-20th century. Whilst the falling away of belief in god and religiosity have been the main focus, however, I argue that the three aspects mentioned above - the social and experiential consequences of the elimination of the soul, the afterlife and a meaningful cosmos – have not been much considered and warrant independent analysis as crucial shifts in the formation of the secular. I will trace some of these in the American context through the discourses and practices of secular institutions and laws that deal with the transition between life and death.

The second story is one of the consequences of the first and is only just surfacing, especially as the immortalist movement pushes the premises and arrangements of the secular to their limit. In part, what becomes interesting here is the emerging tension between science and secularism, which are overlapping but not coterminous domains. This, of course, broadens the usual discussions that focus on the tensions between science and religion.

The Immortalist movement is much broader in its ambitions and revelatory in its consequences than a simplistic take on death, fear of death or an individualistic, selfish attempt at survival would admit. Because Immortalism is a stridently materialist and secular project, its particular struggles – the conceptual and practical problems it confronts and tries to resolve – represent and reveal both the difficulties and the posibilities of materialist secularism. I will focus on three sites of difficulty/possibility corresponding to the three aspects of secularization mentioned above – of the soul, the afterlife and the cosmos.

The first belongs to the general problem of the relationship of mind to matter, which has consequences regarding the legal, epistemological and practical indeterminacies of death and personhood. The second may be glossed as the problem of finitude, which would include not only a personal end but the range of non-religious end-time scenarios, often produced through a technoscientific imaginary. The third site of difficulty/possibility is the problem of purpose, the anxieties and imaginaries that evolve because of the inability to determine or posit an end for human endeavour –at base a cosmological problem, that is, a problem regarding a view of our place in, or relationship to, an integrated universe.

I will argue that, as they are played out today, these tensions largely constitute the secular – that is the secular is produced and may be recognized in this tensions. I argue that these can be seen as problems largely native to secularism, exposing a tension between two strains in it: epistemic and political secularism, or materialist and rationalist secularism[2]. The inability of secular knowledge (principally science) to fix certain central metaphysical categories (person, life, death, autonomy, will, consciousness) destabilizes secular politics, because the politic-juridical subject of the secular is based on them. At the same time, these categories which are

[2] I am using these terms in slightly unorthodox, but not unjustified, ways. This usage will be justified below.

based on rationalist a priori conceptions challenge materialist science, because it it must determine them without metaphysical rationality, transcendental speculation or theology, but has had difficulty doing so.

At the deepest point, these tensions raise existential questions. Despite all the recent focus in the social sciences on the technologies of life and death, existential questions regarding the purpose of life and death continue to be largely ignored. Yet, they are crucial to experiences in and an understanding of the social realm. In a world where secular knowledge has vastly diminished the place and importance of humans in the universe, the existential fragility of being human is heightened in particular ways, through particular dynamics and anxieties. Part of the appeal of the immortalist imaginary to immortalists turns out to be related to the possibility of addressing such existential issues without giving up, in their own reckoning, on the hard premises of a scientific approach – simply put, without giving up on a materialist or physicalist approach.

Clearly, several complicated ideas and assumptions run through all this. Whilst the ethnographic details and the full elaboration of these ideas will take place throughout the following chapters, some conceptual clarifications need to be made here, as they undergird the rest of the thesis in important ways. Under the term Disaggregating Death, I will first elaborate on my claim about the non-universality of death and not dying.

Disaggregating Death

The desire to prolong healthy life, the need to avert death, and the pre-occupation with immortality are often considered universal features of human psychology and society, or even of "the human condition" (Roughley 2000, Mykytyn 2008, Bauman 1992, Becker 1973). Whatever

"universal" might mean in this instance, I will be making the (quite traditional anthropological) argument that it is unproductive to think about the desire to not die as an abstract, generic, universal feature of being human. That impulse or desire, even if it proves to be in some way instinctual at base, is culturally shaped and locally specific. Its assumed universality is in part due to the assumed universality of our relationship to death, often called "death awareness".

Death itself is culturally shaped in important ways. It is certainly true that, thus far, all humans who have lived biologically on earth have died biologically on earth. Since we started wandering out of Africa and into the rest of the globe, over 100 billion of us have lived and died (Haub 2002).[3] And today, like yesterday, another 154,000 human beings may have died.[4]

But – as Marcuse (1959) pointed out – a biological fact is not an ontological necessity. Until recently, there was a general assumption that species life spans were fixed. Whilst average human life expectancy varies greatly depending on the social context, the human life span seemed to have been fixed somewhere a little over 100 years, with some outliers living up to 120 years. Social interventions into the extrinsic influences on life (sanitation, lifestyle, disease and health) have altered life expectancy within a given population. The average person living in the United States one hundred years ago could reasonably expect to live till the age of fifty. Sixty odd years later, an American could expect to live to the age of seventy. By 2004, the average life expectancy at birth had reached 77.3. Those who make it past 65 – about 80% of the population – can expect to live another 18 years, to the age of 83 (Arias 2004). Most of this extension is

[3] The number is based on a 2002 estimate of total human population since the rise of homosapiens. I subtracted the figure for world population to obtain my figure of how many have died. All such estimates are speculative of course, but they do give a sense of proportion. The calculation was done by taking periods for which relatively reliable population calculations have been made and then filling in the years between through an estimate of births per 1000 people.

[4] Based on 2010 estimates of the US census bureau's International Database. Last access June 10, 2010 from: http://www.census.gov/cgi-bin/ipc/pcwe

attributed to gains in the standard of living and developments in modern medicine which have defeated wide spread disease[5]. But this socially-engineered increase in average life expectancy has had no effect on the maximum limits of life, on life *span*. More people live into their eighties and nineties and centenarians are more common. But no one seems to make it much farther.

New interventions into the processes of senescence in animals have introduced the promise to do just that, affect life span. The life spans of laboratory mice, roundworm and fruit flies have been successfully increased by 30 to 65 percent, through genetic interventions as well as a particular dietary regimen known as calorie restriction. In the case of the popular laboratory roundworm C. Elegans, researchers have extended life-spans to over 600% compared to the wild-type norm. This sort of result, implying that the onset of death is not biologically fixed, has opened up the realistic possibility of extending the human life span as well.

Contemporary biology, then, seems to be showing that death is *not* ontologically necessary, or (a weaker claim) that at least the life span is not fixed, in all living beings: immortal cell lines do exist (eg. cancer, embryonic stem cells) and the lives of several animals have been expanded considerably beyond their species life-span.

Biology's flexibility on the cellular level is made that much more complicated by the fact whatever discoveries we make or new possibilities we create for organisms must be connected up to the social through *judgments* about human life and death and personhood. The determination of death in society requires prior judgments about what it is, and it is *not,* to be a

[5] This overall data is misleading in several ways. Particular social groups have higher or lower life expectancies, depending on race, class, gender and location. Authors of studies such as the one cited are aware of these discrepancies and often break the data down according to a number of other criteria. Nevertheless, there have been gains in life expectancy across racial and gender lines in the US, rising at similar rates for men, women, whites and African-Americans. See, for example, Arias 2004.

person or a human or potentially *be considered* to be alive, *as well as* what ought to follow, morally, socially and practically, from those determinations.

Deaths fall under a *range* of different categories, histories, norms, rules and values that make the death of an HIV-infected 14 year-old girl in a Ugandan hospice a radically different event from the death of an 88 year old man in a suburban home in Oklahoma. Those living around them will also have irreducibly different 'awarenesses', expectations of life, affects and reactions to death. Equally, the death of a 20-year-old Californian skier who shoots himself in the head is treated, understood, processed differently from the death of a 20-year-old American soldier killed in combat in Baghdad. One will be called a suicide, the other a sacrifice. To each of these categories a wide array of separate and different procedures gets attached. The suicide will be autopsied and there will be an investigation by local authorities; the family will likely receive the news through a police office and be shaken and blame itself, not knowing who else to blame; they might be ostracized, they might feel shame; the funeral, if there is one, will have a different tone and will likely be quite private; perhaps the young man's life-style will become the topic of inquiry and conversation; a host of counselors and psychologists will be available. The soldier's death will be honored by federal authorities as a sacrifice; he will be called a hero, which is what the sacrificed is called in the modern world, and wreaths will be placed on a tombstone in a veteran's cemetery, perhaps in the capital itself, far from the soldier's home, in a formal event surrounded by men and women in uniform; there will be anger at the enemy and the confidence that next year during Memorial Day there will be official ceremonies with high officials and the families of all other fallen heroes. Suicide and sacrifice are only two categories in the broad range of categories by which we today tend to process and understand the various kinds of deaths around us. Each triggers an irreducible set of procedures particular to that

category. Our fears, expectations, joys, griefs, in short our relation to death, do not precede the categories and procedures but are generated by them.

Durkheim alluded to, but did not fully develop this point in a chapter on piacular rites in *The Elementary Forms of the Religious Life* (1995), when he wrote: "The dead man is not mourned because he is feared; he is feared because he is mourned." Durkheim was not simply trying to get the sequence right. Arguing against Tylor, he was making a more general theoretical point. Fear, in this case specifically of the dead man's soul or ghost, was not a natural, instinctive reaction assuaged by ritual offerings, rational analysis and narrative closures; to the contrary, he argued, it was through the rituals and narratives that fear was being produced.[6] The general point is that practices and rituals create the social subject, help generate affect and disposition. This is one of the arguments of this ethnography: our ideas of and relations to death, as a form of subjectivity with its variegated "awarenesses" and "anxieties", are produced in practice, through the complex interaction between institutions, authorities, medical techniques, legal decisions and the interests and actions of people involved, assuming form not in a singular way but through a multiplicity of norms, technologies and regulations under constant renegotiation, and often in a state of conflict and confusion.

When we think and talk about our relationship to death, about the human awareness of death, or the fear of death, for example, or human mortality and mortal anguish, we ought rather to talk about an awareness of particular kinds of death. What is it exactly we are aware of when

[6] Malinowski took the opposite position, arguing in terms close to Freud's, that rituals (society itself) were lightning rods that channeled the charge of natural or psychological instincts such as the fear of death. Radcliffe-Brown (1964) countered Malinowski by taking up the Durkheimian mantle: "The customs of burial and mourning are therefore seen to be not simply the result of natural feelings of fear and sorrow but ritual actions performed under a sense of obligation and strictly regulated by tradition. They are means by which society acts upon its members, compelling them to feel emotions appropriate to the occasion."

we are "aware" of "death"? What do we fear when we fear death? What contexts, textures and ranges of affect are we referring to when we talk about this fear? *If* fear is what it is.[7]

I don't mean to argue that each and every death, or relationship to death, is unique and irreducible, though on some level it surely is, as any subjective experience may be. I am arguing that death is of different kinds – social kinds, each understood, managed, codified and experienced through social categories (sacrifice, suicide, homicide, accidental, natural), technologies (mummification, heart-lung machine), institutions (hospitals, hospices, mortuaries), ceremonies, specialists (doctors, priests, psychologists, social workers, nurses, morticians), laws, regulations, norms, moralities and geographical and historical contexts – all of which make for categorically different sorts of fear and awareness, different *types* of dying processes and relations to death, that need to be analyzed on their own terms rather than be reduced to a universal human relationship to death.

This approach need not lead to what Johannes Fabian (1973) once lamented as the "folklorization" of death. The anthropological break up of death into nothing but a descriptive ledger of specific, local behaviors arose partly because most anthropologists were interested in the strangeness of the "primitive" and thus had been unable to integrate "universal" theories regarding human relationships to death with their analysis of primitive ritual. At the same time, Fabian argued, the folklorization of death and death-related behavior placed the matter at a "safe distance from the core of one's own society", i.e. the West. He called for a re-universalization of death, of "viewing human experience of death" as the core of a "universal code", as the

[7] Analytically, one might point out that when we talk about 'death', we generally refer to at least four different concepts (Rosenbaum 1993): the process of dying, the transition (or moment) from being to non-being which we call death, the fact of being dead, and – a meta-concept – the range of images, attitudes or affects we might have of any of the previous three.

"supreme mediator of those oppositions and contradictions by means of which the human mind constructs its universes". This universalism is assumed through a reification rather than demonstrated in its manifestations, however – assumed on the simple contention that all humans die and virtually all human societies have some ceremony dealing with death. So instead of illuminating the "we", the assumption that there is such a thing as a universal and realistic consciousness of our death is actually what allows him to formulate a priori a pan-human "we". Death is *used* to help define "us" as humans.

These sorts of assumptions – that death somehow generates meaning, that it transcends social divides, that the universal human awareness of death is socially significant and marks us as human – run through most studies of death. But they are rarely if ever analyzed as themselves constituting particular historical concepts referring to and emerging from a specific social context. In later chapters, I will argue that the idea that death (our universal reactions to it) was a mark of our humanity, that it gave humans meaning, became a particular sort of position adopted in the West at a particular time in reaction to the secular transition, and later in relation to the drying up of social utopian visions. To reach some understanding of "our consciousness of death as humans", it might be worth starting with "our" consciousness of particular kinds of death.

Since Fabian's essay, a good number of studies of death in fact have focused on the West, whilst at the same time taking on specific "social kinds" of death and dying – such as death and dying around organ transplant (Lock 2002, Sharp 2001), Persistent Vegetative States (Kaufman 2000) or "suspicious deaths" and the office of the coroner (Timmermans 2006) to take a few examples. Yet, even when distinctions are made between different kinds of death, or even when death is being examined as a social process, universalist assumptions about death seem to constitute the very grounds of the argument, a humanist (though both secular and theistic)

structure on which they rest. This goes as far back as Robert Hertz's (1960) famous and founding analysis of 'death as a social process' (which Fabian called the last important essay on death). "Death is not completed in an instantaneous act, but is a lasting procedure," Hertz famously wrote (1960:48), a procedure that must be explained in terms of the embodiment of society *in* the person in question, a theory obviously indebted to Durkheim. "The society of which that individual was a member formed him by means of true rites of consecration, and has put to work energies proportionate to the social status of the deceased: his destruction is tantamount to sacrilege…" (1960:77) For Hertz, the person as the site of sociality implies that the person's death strikes the social itself. So "when a man dies, society loses in him much more than a unit; it is stricken in the very principle of its life, in the faith it has initiself… Because it believes in itself, a healthy society cannot admit that an individual who was part of its own substance, and on whom it has set its mark, shall be lost forever" (1960:79). Mortality threatens the continuity of the group as such, at least in terms of the perception any society has of *itself* (a quintessentially Durkheimian move). Hertz continues: "…society imparts its own character of permanence to the individuals who compose it: because it feels itself immortal and wants to be so, it cannot normally believe that its members, above all those in whom it incarnates itself and with whom it identifies itself, should be fated to die" (1960:77). Consequently, Hertz comes to understand burial rites as a process addressing an overarching problem beyond the *pragmatic* replacement of the person as a social member within a social structure: what prefigures all rites is the *socio-metaphysical* healing of the wound in the image society has of itself as something lasting or permanent. After a death, society must "regenerate" itself. Setting aside well-known problems with the idea of "society" as a homogenous, conflict-free entity, Hertz' analysis has had the Durkheimian virtue of bringing attention to the social dimension of what was, and often

still is, generally assessed in terms either of individual psychology or abstract metaphysics. His notion of death as an occasion for social regeneration was fruitfully extended by others such as Bloch (1971) in Madagascar and Metcalf and Huntington (1991) in the US, as well as by Bloch and Parry (1982), and Bauman (1992) in a more comparative and theoretical vein. Yet, the argument disappoints because it ultimately transfers the assumed notion of a fear of mortality and all its attributes from the metaphysical ether or the individual psyche to that thing called society without thereby altering much about the notion itself. What undergirds these theories is a modern assumption that death is and always has been the cause of anguish and that an underlying human desire for permanence and continuity has always existed and *assumed to be opposed to death*. But of course on a social as well as a species or biological level, death *is not* opposed to continuity; indeed, it is its very condition.

Other, recent studies of specific, rather than general, death-related topics, especially those that eschew social cohesion and focus on conflict, often face the same problem. I will take as example Stefan Timmermans' (2006) amazingly detailed and careful study of the office of the coroner as it interacts and comes into conflict with other U.S. institutions and regulations. Timmermans analyses the specific category of "suspicious deaths", the purview of the coroner. He starts by pointing out the specific characteristics of this sort of death: "Among all deaths, *suspicious* deaths most rattle a sense of security. Suspicion involves a surmise of disorder, something awry, unexpected, dangerous, out of the ordinary… The anxiety that suspicious deaths provoke resides in the possibility of foul play that may claim more victims. Suspicion resonates with concerns about the worst lethal faces of social disorder: unfettered violence; seemingly preventable deaths that occur at random; raging epidemics; deadly systemic problems in health care, justice or politics; crippling poverty, famine and other inequities" (2006:12).

Then, in order to insert these contingent management problems into a larger theoretical frame, Timmermans adds that dealing with suspicious deaths is important because it "mediate[s] society's mortal anguish". But aren't the specific threats of injustice, violence, and social disorder enough cause for anxiety on their own merits? There is no need to take an extra step and link them up to a generalized "mortal anguish". It is as though an argument about particular kinds of death is illegitimate without this underlying, universal "anguish".

Additionally, what is understood and taken up as suspicious varies tremendously from state to state. The scholar of U.S. laws of the dead, Hugh Bernard, writes: "There are few areas of governmental organization in which there is less uniformity among the states, than the area of coroner and medical examiner law"(1979:69). For example, in Alaska the law simply states that an inquest and autopsy must be ordered when "a person dies unattended by a physician, or when no physician is prepared to execute the certificate of death" or when "a person has been killed by another" or when there is any ground to suspect that "he [sic] has committed suicide". In California, by contrast, the law enumerates a long list of specific occasions that should warrant an inquest, including deaths from occupational diseases, contagious diseases, drowning, fire, starvation, drug addiction and aspiration (Bernard 1979:70). Thus, what is salient here is not that the coroner assuages a general mortal anguish triggered by suspicious deaths, but rather how and why the category of "suspicious death" is constructed differently in different places, what represents a danger in one place rather than another, what kinds of events are removed from the privatized realm of death and given over to the authority of the state (and vice versa), and what effects the exercise of this authority itself might have. After all, the coroner's office and regulations may in themselves cause suspicion and anxiety, if you are at the receiving end of the

coroner's power and authority – a fact that becomes prominently evident in the case of cryonics and will be analyzed in Chapter 3.

Undoubtedely, humans have a *capacity* for understanding death as an irreversible end to a human (or other biological) agent and one that is personally unavoidable. When and how that capacity develops or is activated is unclear. Some psychological studies (Nagy 1959, Kane 1979, Speece and Brent 1984) indicate that an *understanding of death* is learned slowly in child development. The research suggests that prior to age 7, children think of death as reversible, as personally avoidable, and as leaving dead agents with bodily functions still intact – eg. the dead still eat or think. In other words, they regard it as a sort of absence. But by age 7 and after, children learn the same views of death as adults do. Others (Slaughter and Lyons 2003) suggest that given proper information, younger children can understand that activities such as drinking or eating cease at death for the dead agent. Bering and Bjorklund (2004) argued that young children tend to reason that the brain stops *working* at the time of a biological agent's death (in their study, a mouse eaten by an alligator!), but then go on nevertheless to assume that the agent's psychological functions continue – ie it still thinks or wants.

Even aside from conceptual and methodological problems[8], these sorts of results are hardly convincing. To say that we have the capacity to be aware of our own death is a little like saying all humans have the capacity to eat. It is clear that we must all 'eat' to survive, and we all desire food sooner or later, but as an abstract, biological assertion it is hardly interesting or informative, especially on a social or cultural level. It does little to explain when we eat, what we

[8] For example, in the first experiment cited, "proper information" means telling the child that food is what keeps a person alive. This is really a prompt, meaning that what is being measured here is not a child's awareness of death but the child's ability to reason by analogy given certain bits of information (eat:not-eat as alive:dead). In the second experiment, what does "the brain stops working" mean to a child? To reach the conclusion of the researchers, one must presume a complex understanding of some relationship between brain and mind.

eat, and how we eat; it says nothing about rules of asceticism or extravagance, about feasts and potlachs, about chefs on TV, about French reduction sauces or a taste for bitters, nothing about global food distribution networks and political famine, about the history of Sushi in the US, about the links between sugar and capitalism…

Death awareness universalism is also sometimes "demonstrated" with reference to the fact that most if not all human cultures have myths and stories about how they became "mortal" or about how they can become "immortal". Yet, as soon as we state this as a sort of *fact*, the problem becomes obvious. We are assuming what we are stating because we are relying on a universal sense of "mortal", "immortal" or "will die". Are we to accept that the differences are negligible between your conviction that one day you will die and that of an Achuar from the lowlands of Ecuador who believes that s/he will one day inevitably die, but only and always as a result of someone's hidden homicidal intention (Taylor 1996)? The awareness of a gym-and-supplements, organics-only, health-obsessed Californian who, not giving a thought to the impending doom of civilization, is working hard on himself to be as healthy as a 40 year old when he's chronologically 60, with that of Mocovi laborers in Northern Argentina who, convinced of an immanent apocalypse *and* their invincibility to harm, took up spears to attack colonial settlers only to be mowed down by machine-gun fire (Sullivan 2002:184-5)?

I am not suggesting that the human awareness of mortality is insignificant, non-existent or even new. Whatever capacity we may have for awareness and in particular for an awareness of something like "death", or our "end", it is insufficient merely to evoke the capacity as though it already had some content, some shape, some effect. Death consists of sets of different concepts and doctrines that often are deployed strategically by both the weak and the powerful; concepts and doctrines that are discussed and elaborated through people's lives and through institutions.

If death is not one thing, neither is not dying. Resurrection, immortality of the soul, the island of the ancestors, the underworld, Paradise, Purgatory, Nirvana, the union with nature, parousia, the coming of the occult imam, immortality through works or fame, martyrdom, reincarnation, the dissolution of consciousness into a universal spirit, the prolongation of life on the ventilator, cryonic suspension, memento mori, digital memorials, wills and testaments and trusts and foundations in someone's name – these are only some of the names, processes and images attached to historically and culturally specific conceptions of 'not dying' and imaginaries of an after life. So the common categories afterlife and immortality encompass and dissolve a number of others which therefore need to be identified and examined as co-constitutive of the general categories. In addition, this approach then calls for closer attention to the links between personal and collective continuity, personal and collective survival, meaning that in each, conceptions of the personal and the collective – the nation, the species, the tribe, the kin group – are at stake. Finally, finer distinctions must be made between concepts such as the survival instinct and death avoidance, between transformations involving the material body or psychological self, between individualistic and relational accounts of continuity and so on.

Acknowledging these differences is crucial to understanding the way in which responses to and experiences of death and dying are socially shaped, and in turn shape society. Whatever the biology of the species fear, it is hard to correlate it with a simple, universal reaction to danger, death or mortality: too multifarious are the public and social manifestations of death rites, death taboos and so on. As Metcalf and Huntington (1991) point out, an outline of private fears does not cleanly account for public rituals and practices regarding death. If anything, we are human not because we have *a* reaction to death, but because we have so many.

The species level survival instinct is all too easily conflated with individual survival, or merged with death avoidance or a so-called innate fear of death (often in the service of some ideology or other). For example, the history of both individual and collective self-sacrifice, histories of mercenary soldiers, the relative prevalence of suicides in urban industrial societies or practices such as the live self-burial of the master of the fishing spear in some Dinka tribes (Lienhardt 1961) – such things do not lend much support to a theory of absolute, universal death avoidance, or a determining biological fear of individual death, though they might not offer any evidence against a self-defense instinct either (the point here is not to refute the latter). Often mortality awareness is equated with fear of death or with death anxiety without any thought given to how specifically an awareness of a particular sort of mortality might give rise to a different sort of reaction, such as *choosing* rather than avoiding death, which itself may be variously valuated as cowardice, heroism, wisdom, sin, pride, slyness, martyrdom, irrationality, or a "good death", at different times in different cultures, and that if there is a fear or awareness of death it will likely manifest itself through a variety of forms, institutions and norms, giving rise to a range of responses and counter-responses that have very specific historical effects on the experience of life, on judging what life is worth living, what life is worth dying for and why.

Souls, Afterlives and Secular Finitude

Death, I argued, is not one thing, meaning that there are various ways in which the exchanges between life and death are understood, engaged and given meaning in particular social, historical and cultural conditions. The secular, broadly considered, is such a condition, one that has produced a distinctive relationship to death, partly through materialism's evacuation

of the soul (and hence the elimination of the afterlife) and partly through non-religious eschatologies that project their own end-times.

One might object that even within this so-called Secular Age most people are not materialists and continue to believe in a lasting personal spirit or soul, and a great many continue to believe in some sort of an afterlife. This objection does not address the bigger context in which this belief is held by groups or individuals. As Charles Taylor (2007) and in a different way Talal Asad (2003, 2006) have pointed out, an understanding of secularism or the secular will not come about by counting hands raised in favor of belief or unbelief, but rather by understanding the conditions of the secular.

So first, a distinction between secularism and the secular. Secularism is a political doctrine that insists on the separation of the institutions of religious authority from political and scientific authority as a desirable social goal. The secular refers to the sensibilities, concepts and practices that create specific kinds of subjectivity, specific attitudes, ethics, disciplines, and dispositions, specific selves and institutions (Asad 2003). When I speak of the secular, I refer not to the doctrine of the separation of church and state, but the more complicated institutional and discursive space in which contemporary senses of temporal existence, worldliness, and immanence are produced.

But what about these may be qualified as specifically secular? Asad argues that it is futile to search for an ahistorical analytical essence that can clearly and consistently identify the secular. What has counted as secular has changed where institutions, rules, and concepts regarding religion and society have changed. So the secular is better viewed as a grammar, as a concept that is differentially activated, that produces and becomes manifest in a specific articulation of power through a certain period in history – as the economy, for example, is

differentiated as its own independent sphere of activity aside from the rules of religious authority, or as the social or natural sciences vie for authority based on their own immanent criteria. This implies that we must pay attention to the shifting relationships between institutional formations and actions or personal discipline, between law and personal morality, and, finally, between forms of knowledge and behaviors or sensibilities in the modern world (2003:25). Asad's three relations correspond to three domains that became strongly related in the rise of secular authority: society (configurations of classes, institutions, economies), the state (law), and science (forms of knowledge). These are the three key sites of the secular, meaning that they were domains of activity and power that were slowly constructed to be separate from what might count as religious, and to carry the promise of a controlled and improved future for humanity. The negotiations over authority and struggles for control keep modifying the space of the secular (what is accepted as religious vs non-religious) and introducing new modes of action, thus yielding different political disciplines and moral assessments, different constructions of social identity and allegiance. What's at stake in this process of secularization, is not just the shallow and supposedy neutral separation of institutions, but "the unceasing material and moral transformation" of citizens (their bodies and minds) "regardless of their diverse 'religious' allegiances" (2003:191).

Charles Taylor, with a different agenda, trains his lens on "experience" in a secular age, or rather how the "secular age" has produced "the possibility or impossibility of certain kinds of experience" (Taylor 2007: 11). For Taylor, an envelope of secular assumptions covers the majority of people's experiences and assumptions in today's West in general[9] – even for people

[9] There are clear problems with Taylor's geographical delineation (North America/Europe) and how it articulates with his conceptual parameters – do the edges of "the immanent frame" look different if you take the US as its center? Why is the immanent frame not applicable to Nicaragua? Etc.

who are “religious”. In other words, religious or non-religious, a person in the West lives in a context in which the existence of god is not taken for granted, in which the world is largely made sense of in terms of this-worldly causality, and in which the battle of belief vs. unbelief becomes initself constitutive of experience on a wide scale.

How do these approaches to the secular bear on the topic of death and immortality? Rather than belief, Asad and Taylor ask us to attend to the general *conditions* of action, subjectivity, and knowledge formed and regulated by such public institutions of authority and personal discipline as are deemed to be non-religious. In the case of death in the US, for example, whether you are a Buddhist or Christian or Atheist, your dying and later dead body will be processed through institutions and rules that adhere to materialist determinations of the body’s condition, using specific material technologies, and applying secular laws regarding the body and its death. Taken as a whole – as the set of knowledge, practices, rules and institutions that manage the transition from life to death – this is what I call the *secular regime of life and death*. If for some reason or other one were to object to some part of this series of procedures – say autopsy, as we will see – then usually if there is any accommodation it is only granted when there are religious reasons for the objection. It is granted as a “religious exception”, thereby only confirming the secular grounds of the regime as a whole.

Even if many in the West, particularly in the United States, believe in the soul and its survival after death, most people must face this secular regime and its materialist assessments. Further, the proposition that an afterlife or an immortal soul are impossibilities is widespread and authoritative enough (with science behind it), that most people not only encounter but must confront the possibility that there is no afterlife, that a materialist belief about life and death may well be the true, valid belief. Any believer in an immaterial afterlife is also well aware that the

authority of science tends to dismiss the existence of the soul and hence the possibility of a personal afterlife and must hold on to their ideas and practices with that in mind. Institutionally, of course, the afterlife is certainly not part of the reckoning in a secular court dispensing reward and punishment, nor a part of the medical treatment of people on their deathbeds. In general, the elimination of the afterlife from public life and the intrusion of the possibility of skepticism about it in private and public belief have had an effect on more than just the administrative and regulatory regimes of life and death. They have affected existential experiences of life, the sense of meaning and fulfillment derived from it, and the temporal ordering of individual and collective life cycles – all these, too, have been secularized.

Death and its attendant concepts, the afterlife and immortality, have played a central role in the shifting borders of the secular, not just by being claimed, reclaimed or given over to one or the other domain (secular vs religious) but also by shaping, in this process, the very boundaries and authority of each domain. Thus, for example, aside from the "belief in god", the concept of "immortality" has been the strongest marker of religiosity from a secular perspective, especially from the beginnings of the materialist movement in Europe in the 18th century. Far from being a mere side-effect of the elimination of a belief in god, the elimination of the idea of immortality was thought of as itself an independent and crucial step on the way to establishing a materialist or "immanent frame" (Taylor 2007), and later a secular space. Grappling with and proving the non-existence of souls has been a major boundary maintenance activity of secular authority.

Though clearly it was a central doctrine in Christianity, the immortality of the soul was not always discussed in terms of "religion" or "god". Often it was considered an independent metaphysical matter. The obvious case is the Platonic line regarding the immortality of the soul, which had to do with the ideal realm, and little to do with what has been categorized as religion.

But there are plenty of other examples. Kant also examines them separately as does Hume. And the series of discussions in England and France that gave rise to a robust materialist conception of the world in the 18th century had as much to do with the existence of god, as with a *separate* debate over the concept of the soul and its survival after death (Martin and Barresi 2006; Hecht 2003). Because of its materialist commitments, and therefore its aversion to anything resembling a soul, early secular thought (atheists, free thinkers, and materialists) also took aim at Plato, Kant and Descartes, that is, at the rationalists. The development of secular thought, especially in its materialist vein, is inseparable from its prior goal of disavowing the soul and eliminating immortality (ie. apart from arguments about the elimination of god). In this rationalist vein, these matters were merely sequestered, as per Kant, into the domain of personal faith. So soul and immortality became fully secularised through this history, as they were either eliminated altogether or pushed into the domain of "religion" by secularism's various internal struggles.

Jennifer Michael Hecht's (2003) detailed account of the Society for Mutual Autopsy, a group of French materialists who were dedicated to dissecting brains after death, illustrates the extent to which early materialist agendas were driven by an obsession with the concept of the soul. On the one hand, the society's mission was to show that there were correlations between the physical features of a brain and that person's mental characteristics. On the other, that objective was determined by an ideological goal: to prove the non-existence of the soul. Hecht suggests that this "deconsecrating project guided a host of endeavours at the dawn of professional science" (2003:254). Materialist scientists and anthropologists wanted to discredit the sacred and transform it into the profane, by taking on specific aspects of what was considered religious: religious ecstasy, demonic possession, faith cures and the soul's immateriality. The crucial criterion for scientific work was not so much methodological rigor, repeatability, or

verifiability, but the production of such knowledge as would "lock out philosophy and religion" (2003:50). The crucial criterion was the absence of "supernaturalism". Against the Catholic notion of the sanctity of the whole body, the integrity of which was crucial to resurrection, and against the noumenal soul, they publicly denigrated their bodies after death, calling it "rotting garbage" or "an assemblage of decomposing matter", positions which were also articulated as specifically anti-clerical. At the same time, Hecht shows, they "agonized over the end of the soul and its consequences for humanity" (2003:2); the creation of the Society for Mutual Autopsy was an attempt to make sense of their soulless death by offering up their own bodies and brains to to science and progress, giving them a chance to connect their existence to eternity, or at least posterity.

The materialization of the soul, however, was never completed. Instead, there arose new concepts that tried to capture or explain various aspects of what had been delineated by the concept of the soul. And these concepts were developed through (and in turn generated) the new disciplines and modes of knowledge, starting with the social sciences as they separated themselves from the humanities (especially moral philosophy) and theology on the basis of the secular differentiation of spheres of value and expertise (Calhoun et al. 2011:4), followed by new studies of the "mind", mainly psychology. Descartes was the first to begin to use "mind" in this sense. Though he was a believer in god, as is well known, and his epistemology ultimately depended on god's existence, Descartes started using *mens*, or mind, in order to avoid using "soul" as his referent and still refer to some of the same capacities and attributes. Soren Kierkegaard turned spirit into self, and William James, who studied the physiology of the brain, developed the term "spiritual self" to denote "inner subjective being". Originally, in 18th century France, *psychologie* was considered to be doctrines about the soul, that part without which the

human would not survive. But as "soul" was slowly relegated to the untouchable domain of religion, and as psychology began to make claims as a scientific discipline, there was a clear effort to steer away from such formulations.

Modern psychology, and its subconscious, arose just as the soul was being laid to rest. Prior to 1880, there were no academic departments of psychology in American universities (Fuller 2001). Classes in psychology, if there were any, were usually taught in theology or philosophy courses, often as an extension of Protestant moral theology (Fuller 2001:125). The brain, for its part, was entirely under the purview of physiology departments. Within a decade, however, almost every university in America had established a separate department of psychology – to teach a topic now being referred to as "psychology without a soul". That first generation of professional psychologists, themselves the sons of Protestant ministers, saw their main task to be the separation of the study of the mind from theological concerns (Fuller 2001: 125). The history of early psychology in America clearly traces a shift from the study of mind as soul to a study of the mind without soul; in other words, as a subject within the purview of science. Such a project was central to the separation of metaphysics from the study of physical reality. It was just this separation that led to Tylor's proto-cognitive accounts of spirit and soul in anthropology, as well as to Durkheimian attempts to give mental phenomena an empirical basis through the social. One could also cite later attempts that tried to occupy the space left by the elimination of the soul: concepts of self, person and personality in sociology, anthropology and psychology; the cluster of concepts glossed as consciousness (awareness, autonomy, subjectivity, capacity to feel pain, etc) in political science, law, philosophy, critical theory; and the more recent physicalist theories of cognition and the brain in neuroscience.

The project of materialisation remains incomplete: such features and entities variously falling under the general category of mind have been somewhat stubborn in their resistance to materialist determinations. This is not to say that the "mind" is not a secular concept. It is, if only because it is one of the specifically designated non-religious place-holders for the discarded religious idea of soul, or for what remained when the soul was flushed out. The trouble for materialists, however, is that mind and matter have remained thus far irreducible to each other. Needless to say, a materialist epistemology would have trouble accommodating transcendent or dualistic explanations of the mind. The mind, in this view, must be explainable without any reference to the transcendent. So it must have physical correlates, at this point thought to be the brain and its various regions, and it must be subject to causal determination, at this point thought to be happening through the brain's biochemistry. But science – specifically cognitive science, increasingly based on informatics – has had a hard time providing serious candidates for physical and causal explanations of capacities such as free will, or experiences of consciousness and subjective feeling, or notions such as creativity or freedom (through which secular politics unfolds) which are the basis of a secular concept of personhood. It may well be that these too, like soul and spirit in the past, will be explained away as false beliefs or illusions.

Today, it seems impossible to discuss any notion of immortality or the afterlife separately from religion, for the secular has pushed all notions of soul or survival beyond the body into a religious domain. That is why Immortalists, reviving a physical notion of immortality, are constantly caught in the secular-religious conundrum, as we'll see later. Yet it *is* possible to draw a genealogical line that is not reducible to religion alone, from a platonic notion to the later Christian concept of an immortal soul to psychology and its subconscious to contemporary concepts of self and mind which, especially through cognitive science and artificial intelligence,

are attempting to ground the mind in a purely materialist basis, as the informatic or biochemical workings of the brain. Martin and Barresi (2004, 2006) have outlined some of these shifts in terms of the "naturalization of the soul". However, they focus on the doctrinal and philosophical outlines of personal identity, and so the elimination of the afterlife as a social and experiential phenomenon is erased from the story. Yet, this reconfiguration of soul, immortality and afterlife constitutes one of the key experiential conditions of modern secular life, quite aside, though not totally detached, from belief in god or religion. That is, regardless of any relationship to god, one thing that was eliminated through the elimination of the soul was any possibility of personal continuity after physical death, and that had deep effects on shaping a particular sense of mortality and of the time of life.

In sum, it is not belief as such (ie belief in a soul vs belief in a future of scientifically extended lives) that counts for me here. Rather, more anthropologically interesting is to outline the conditions that make certain "modes of immortality" both plausible and desirable – or implausible and undesirable – in the present. For example, the main three Immortalist strategies – biogerontology, cryonics or artificial intelligence – have all been activated, as we'll see, through the powerful concept of "information" and the tendency to view human bodies *and* minds as constituted by information (rather than animated by a soul, or driven by a psyche). What specific practices does this informatic mode generate? What kind of ethics or selves does it develop? What discipline does it demand of participants? Under what norms and rules does it operate? And what sorts of experience does it gives rise to?

Additionally, by examining the concept of immortality in terms of a range of activities, discourses and genealogies which have to do with forms of survival or continuity despite death, I want to suggest that immortality and the afterlife can be fruitfully discussed in relation to present

living. By this, I mean two things: first, that responses to secular finitude, to the existential void, have shaped our valuations of life and death in a range of contexts – from the discourse on the "good death" to contemporary technological utopias of long life; second, that rather than treating the afterlife as a belief system separated along secular-religious divides, a focus on the experience of living leads us to think about the afterlife as a temporal ordering structure – a temporality – that can serve to extend or squeeze or alter our sense of personal and collective futures.

Cosmological Collapse and Secular Eschataologies

Science and secularism's relationship to cosmology, or the place and purpose of humans and human activity in the universe, has been problematic. These sorts of existential questions have been mainly regarded as unanswerable by science and therefore best left alone, given over to religion as non-empirical concerns with ultimate concerns. At least as far back as Kant, one of the most common options exercised by rationalist *and* scientific thought has been to hedge the bets on existential issues, of where we came from, what we are doing here and why.

Kant started out as a "cosmologist" –interested in the workings of the entire natural universe. For example, his *Universal Natural History and Theory of Heavens* (Kant 1755/2008) is a surprising account of the entire cosmos, in which he not only argues that alien life forms must exist but also that the universe will necessarily come to an end, likely one of science's first such theories about the end of the universe itself. But Kant's motivating concerns were moral: why we do what we do and how we can know what we do is right. In his early work, cosmology was directly linked to, not aside from, everyday life. Kant's later work on reason began as an inquiry into the logical problem of four antinomies, which he actually calls "cosmological

ideas": space and time being infinite vs having a beginning; ultimate matter as individisible vs as infinitely composite and divisible; free will vs natural law; necessary cause vs contingency.

According to Kant, all humans are endowed with reason and one of the properties of reason is its independent synthesising drive striving to complete knowledge, to tie together all the loose bits of string dangling in front of our senses and presented to our understanding. But reason is also faced with the limits of our experience in time and space. We cannot know the *origin* of the series, for our experience cannot provide enough evidence: how can we even conceive of what caused the first cause? Ditto for the *end*. So there is a gap; and reason does not abide gaps. Reason's ultimate goal – to synthesise and complete knowledge – will always be frustrated. Yet, quixotically, mysteriously, reason can't help but go on to answer the unanswerable. As a result, reason over reaches the evidence in order to complete knowledge: it creates "ideas" that plug the hole created by the unknowability of the beginnings of time, the original cause and final purpose. These stop-gap ideas of reason were God, Freedom and Immortality.

Kant's recourse to transcendental reason would soon become anathema to the acceptance and production of legitimate scientific knowledge and his cosmological ideas or metaphysical extremities were deleted from the proper concerns of scientifically-based fields. Michel Foucault's *The Order of Things* (1970)[10] outlines this historical unfolding of secular finitude. *The Order of Things* has mainly been read as an account of the emergence of "modern man" as a category, as an object of knowledge within a particular set of disciplines – linguistics[11], biology,

[10] *The Order of Things* uses neither the term secular nor the term after-life; Foucault manages to circumvent both categories altogether, which is an admirable feat. The pity is that the idea of finitude is neither taken far enough into the 20th century, nor is it developed later in his other works.

[11] Derrida's later work deal with finitude specifically, but in so far as the argument relates finitude to our incapacity to understand and act in the world outside of the boundaries of human discourse, it fits within the bounds of what I call epistemic finitude amply described from a more sociological perspective by Foucault.

economics – that shapes the core of modern knowledge of the world, and of the human place in it, from the 18th century on. It may be viewed, as the title suggests, as a picture of the modern cosmology; yet, Foucault seems to be clear that the intrusion of a sense of finitude, the elimination of the transcendental, is precisely what makes this merely an "order" and not a cosmology. Life, labor and language are the uber-concepts through which "modern man" – immanent, material, non-transcendental – was organized theoretically and came to know and realize himself in through the fragmented domains of a positivist knowledge laying out the laws of biology, economics, linguistics bearing down on human existence.

It is not that humans once felt infinite and immortal, but suddenly came to feel engulfed by mortality or by an awareness of mortality. *Rather, the awareness of mortality and its consequences were transformed by the change in the conditions of knowledge and experience*. Prior to the 19th century, the notion of mortality and finite time was more an idea about earthly "limitations" – "man" was destined to work, destined to die and would never come to understand the world in its infinity, to attain absolute knowledge, at least not in his lifetime. This did not mean, however, that that sort of knowledge was by definition unattainable, unimaginable or useless; in fact, what knowledge we had of ourselves was foregrounded by the eternal, understood through a flash of connection with the transcendental world, and waiting for proper revelation in an afterworld or hereafter. But being grounded in a positivist (exclusively earthly) view, the modern subject, "man", had to abandon any recourse to the "infinite", to the transcendental, in his understanding of the possible world and of his place in it. In the modern era, there arose "the strange stature of a being whose nature is to know nature, and as a consequence itself, as a natural being" (310). The discovery of finitude, and presumably its effects, did not take place within "the thought of the infinite, but at the very heart of those

contents that are given, by a finite act of knowing, as the concrete forms of finite existence" (316). It was not by comparison to the infinite that a sense of finitude developed – that comparison between human limitations and godly unboundedness long existed. Rather, a sense of finitude came about through an understanding of facts on the ground, that man's knowledge is finite, trapped within the positive contents of language, labor and life, without a possibility of escape, that considering the infinite could not be part of the work of knowledge.

This type of knowledge, then, necessitated the elimination of a metaphysics of the infinite, such as Descartes' god or Kant's a prioris. The empirical contents came to contain the principle of their existence entirely within themselves – ie the secret to a plant's life was held within the plant's makeup, and ditto for man – so "the metaphysics of infinity became useless" (317). Man would be fixed in history, now understood to be determined by laws relating, in Foucault's analysis, to the domains of life, labor and language. The cognizance of the world in terms of these new forces exterior to man pushes further a cognizance of "finitude" because those forces make of man also an instrument of their own, since they are both exterior and anterior to him, they are "older than his own birth, anticipate him, overhang him with all their solidity and traverse him as though he were merely an object of nature, a face doomed to be erased in the course of history. Man's finitude is heralded… in the positivity of knowledge" (313).

The finitude Foucualt outlines formed the backdrop for Weber's theory of disenchantment. Based on the famous formulation in "Science as a Vocation", Weber's notion of *disenchantment* has come to be equated with scientific materialism's desacralization of the world. Weber writes, "… principally there are no mysterious incalculable forces that come in to play, but rather one can, in principle, master all things by calculation. This means that the world

is disenchanted. One need no longer have recourse to magical means in order to master or implore the spirits, as did the savage, for whom such mysterious powers existed. Technical means and calculations perform the service" (Weber 1958: 139).

For Weber, the scientific worldview is wedded to a concept of nature as an immanent order, independent from "all personal ethical qualities of man" (355). This impersonal nature raises the question of values and ends. Science may discover and maneouver the operations of this immanent world, it "contributes to the technology of controlling life by calculating external objects as well as man's activities" (150), but how is it to tell humans "what we shall do and how shall we live"? (153) In an immanent frame, how does one assess whether and what life is "worth while living"? Weber's answer, and an answer most have settled with, is that it can't.

The implications of this divide from the ethical, from meaning, are deeper than just a matter of making daily decisions, for example, about which technology is acceptable. Just as the immanent world is, in principle, fully knowable through science, so the sphere of values is not subject to scientific rationality, even in principle. This implies that science will gain immense power over the material world, but will be forced to give up on the moral and existential realm – unless, of course, such aspects of our lives as morality are finally found to be grounded in a common materialism, both in our neuronal structures and in the physical structures of the universe.

Science has not been entirely averse to attempting cosmological integration and providing foundations for metaphysical and moral assumptions – neuroscience and the origins of consciousness, astrophysics and the origins of the universe, molecular biology and the origins of life, evolutionary psychology and the basis of morality tackle the larger metaphysical questions without quite giving them the same name. But by and large, because secularism's epistemic

grounds are based on immanent criteria such that cause-and-effect relationships are understood in this-worldly terms as matters of nature, technology, human intention, or sometimes accident, so existential and cosmological concerns have largely been deemed unresolvable and the focus is instead placed on what Weber called the workaday. Existential questions regarding purpose and origin are pushed aside by secularism as *merely* questions of religion – or at best metaphysical speculation. They have been, in Anthony Giddens' terms, sequestered because secular – or in his terminology modern – knowledge is not able to provide convincing answers.

According to Giddens (1991), modernity is an internally referential system, impervious to extrinsic or transcendent factors. Thus, factors that appear to be extrinsic to the normalcy of modernity are sequestered outside normal social action and interaction. This is the case with death – "the great extrinsic factor of human existence" (162) – as well as with criminality and insanity. This sequestration is itself a mark of modernity: "the ontological security which modernity has purchased, on the level of day-to-day routines, depends on an institutional exclusion of social life from fundamental existential issues which raise central moral dilemmas for human beings" (156) – dilemmas which presumably are not easily answered by the authoritative apparatuses of high modernity.

The exclusion of existential questions from understanding turned the unknown into the unknowable, inversing the directionality of the modern scientific method, which aimed to turn the unknown into the knowable, and subsequently the known. Thus, the "why" question continues to haunt scientists and secularists in at least two ways. First by the yearning for an answer; second, by the scarier thought that science with all its prowess might not be able to provide the answer, indeed that science has increasingly confirmed the opposite of a satisfying answer, crushing the intuition that this must all be here for a purpose. Interestingly, American

legal decisions tend to acknowledge the entanglement of these existential and cosmological issues with matters of personhood, whilst at the same time abdicating all responsibility for defining or adjudicating such matters, explicitly relegating them to the "private" realm. Thus, in an important abortion decision, the Supreme Court writing about the Fourteenth Ammendment, Liberty and procreation, makes this stunning statement: "At the heart of liberty is the right to define one's own concept of existence, of meaning, of the universe, and of the mystery of human life. Beliefs about these matters could not define the attributes of personhood were they formed under compulsion of the State."[12]

In Immortalist circles such discussions are not privatized. They occupy an important position. It was through the interviews and informal discussions that I noticed a consistent tendency to discuss existential and cosmological matters. Virtually every one of my interviewees began talking about what one of them called the "perennial metaphysical questions"; they linked this to their commitment to life extension, because – in the simplest formulation –by allowing survival into the future, radical life extension also offered a possible way of finding out "what this is all about", "what we are doing here". As one person said, "the only way to find out is to stick around long enough." But it's not just a game of wait-and-see. Immortalism has also provided a space in which such discussions seem to have legitimacy. In daily life and discussion, they produce an on-going reflection on the constitution of humans, the cosmos and what the distant future might provide or change in us. This constant reckoning of life on a cosmic scale, an emerging discipline of the self activated by immortalist practices, came to frame my understanding of Immortalism as a secular venture, proposing, as we'll see in the final chapter,

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[12] Planned Parenthood Of Southeastern Pa. v. Casey, 505 U.S. 833 (1992)

alternatives to one of the great aporias of science and secular epistemology: cosmology and the question of purpose.

In the Western tradition of secular reckoning, then, death is entangled with *finitude*; that is, understandings of and relations to death are not relations to some neutral sense of mortality, but are colored by understandings of and relations to an absolute end, conceived as a non-religious position. Indeed, concepts like "death anxiety", "universal death awareness", or the "anguish of mortality", are, I will argue, not prior to modern Western finitude, but themselves an effect of it. One aspect of this is clearly the elimination of the afterlife. But by finitude I refer to something more than just the finality of death in an individual's life: it includes Weberian disenchantment (an effect of the finitude of the world, its knowability), the collapse of cosmologies and transcendental meanings, and a condition in which it has become possible, even common, to consider the whole species, the world, even the universe as potentially transient, subject to a final end, a condition abetted by the end of social utopias, by the imaginaries of nuclear holocaust, and accompanied by a loss of purpose, throwing lived life into a state of crisis, making it feel incomplete, inconsequential in itself and unclear as regards to ultimate meanings. This radical finitude is the temporal mode of secularism, its relationship to the end: this is secular eschatology.

Radical finitude – with its foreshortened eschatology – has substantially shaped the *social as well as medical* landscape of death and dying in the West in general as well as in the US – an assertion that might seem obvious, and yet has not been examined in detail in anthropology (psychology, in its own ways, has offered some exceptions (Lifton 1987)). The US, with its own relation to temporality, to endings and utopias, has had culturally particular responses to finitude. Apocalyptic and millenialist movements are an obvious example, but there has been a more

general trend in the US which often has the population "transfixed by the possibility of imminent catastrophe, cosmic redemption, spiritual transformation, and a new world order" as Harding and Stewart (1999) put it. Going further, Joseph Masco (2008) has argued that end-time scenarios are part of the nation-building strategies and political apparatus of the United States. Another response, I will argue, is embodied in the modern "death acceptance" or "good death" movements, which has in effect produced its own life-death regime. The opposite response, in the mode of American techno-utopianism (Segal 1985), is the Immortalist life-death regime, which is not coincidentally mainly limited to the US.

Epistemic vs Political Secularism and the Problem of Indeterminacy

Between its rationalist or neo-Kantian conceptions and its materialist premises, the secular faces a quandary: it separates personhood from biological life through consciousness, but it locates the markers of consciousness in biology itself, in brain *signals* that are meant to be *signs* of possible consciousness, itself only a term with multiple meanings. This is what in the early cybernetic years, Margaret Mead and Heinz Von Foerster characterized as the difference between "beep beeps" and meaning[13]. The slippage between signal, sign and symbol, between a mechanical input-output exchange between brain and machine (signals interpreted as signs for), and a meaning-imbued and polysemic social symbol – consciousness, with respect to which the signal is being interpreted – may have something to do with the fact that despite commissions and declarations there is no consensus amongst experts on which signals may be read as the appropriate sign for the symbol we know as "consciousness". Yet the search must go on. To put

[13] Von Foerster even seems to have suggested that information theory should have been called *signal theory* (Gleick 2011:248).

it in the language of cybernetics, materialism is stuck in a negative feedback loop where the restraining condition – do not stop until you find the mind! – is, or may be, not a zero, but a void. Or even more absurd: to find the mind in the materialist sense would be to automatically destroy it, that is, to make it something other than the mind. For to be able to determine the mind causally, would be to strip it of autonomy and consciusness as we understand them. It is like the snake committed to eating its tail, until it gets around all the way to its own head at which point it's no longer clear what it could continue to eat or, indeed, what it has been eating all along.

Materialism is not only in tension with itself. Though it is crucial to secularism, as part of its epistemic and practical grounds, it is also in tension with other parts of secularism. For in its political aspect, the secular also depends on properties of mind such as consciousness, rationality, autonomy. Secular politics (essentially liberalism) is ultimately based on the ascription of these qualities. It has freed humans from transcendental determination and distinguished "being human" from other forms of being based on the mental, not biological, capacities of the human species – although rights have been traditionally based in the species, it is not through appeal to our bipedalism or binocular vision that the idea of human rights has developed and been defended. To the contrary, historically human rights were conceived as rights precisely because it was thought that humans could be separated from their biological base, from the determinism that seemed to trap other animals. This rationalist – or liberal humanist or neo-Kantian (Connolly 1999) – position is based on the authority of a priori, universal reason, deliberately severed from the body's animalistic experience and primitive passions. The connection between human consciousness as value – its individual will and ability to reason – and the legal concept of personhood stems from this rationalist vision. So secular politics rears itself through appeals to *mental* capacities for reason, autonomy and choice, that is,

the individual ability to act rationally and freely or morally. This is what seems to matter to modern subjects. This is also what immortalists want to extend in time: their free, rational selves, complete with memories and affect.

Whilst materialism is left with little choice but to ground the mind in a physicalist description of the brain – one is tempted to say, "tame the mind", after Phillipe Aries' description of "tamed death" – if it were to achieve its task, it would thereby threaten the very characteristics that secular humanism values with respect to the human mind – autonomy, freedom or choice – which are valued precisely because they are deemed to be free of biological or external determination. Physicalist explanations come with a built-in determinism that seems unable to accomodate autonomy or freedom, except by dismissing them as epiphenomena, a nice word for illusion, which does not do much to explain the phenomena themselves. The debate over morality, free will and determinism was as heated in the 18th century, when it was searching to find a sound basis for public morality and public values without recourse to religion, as it is today precisely because of this problem: Materialism as the foundation of scientific knowledge could not be discarded; rationalism as the foundation of modern politics could not be discarded; they seemed to contradict each other at crucial junctures (for example, determinism vs free will), yet they both had to be accommodated by the secular because they were both crucial aspects of it.

I am marking two modes here to which I alluded earlier: epistemic and political secularisms. Jose Casanova's division between philosophical-historical and political secularism (2011) harbors some interesting similarities with my distinction. But there are some crucial differences. Most important is that Casanova lumps together the various epistemological approaches of the enlightenment under this one "philosophical-historical" term, so that

materialism and liberalism fit together unproblematically. He has a reason for doing this: he wants to keep all the obvious "ideological" premises in one camp and offer up "political secularism" as an ideology-free, structural possibility. For Casanova, the political doctrine separating institutions of governance from religious institutions (or "secularism as statecraft principle") is ideologically neutral (2011:66). It only entails "some principle of separation between religious and political authority, either for the sake of the neutrality of the state vis-à-vis each and all religions, or for the sake of protecting the freedom of conscience of each individual, or for the sake of facilitating the equal access of all citizens, religious as well as nonreligious, to democratic participation. Such a statecraft doctrine neither presupposes nor needs to entail any substantive 'theory,' positive or negative, of 'religion'." But this position is neither genealogically nor analytically accurate. State and social institutions of governance must adjudicate all sorts of cases, from homicide to food and drug safety, and in adjudicating they must assume some position with respect to conditions of knowledge, truth, reality and so on, and with respect to the acceptable justifications and evidence for any claims made. Religious or mystical or supernatural justifications and claims – that is, claims and justifications that do not adhere to a scientific view of knowledge – are de facto inadmissible. So the political separation of these institutions *does* entail an ideological position with respect to what kind of explanation is acceptable. And what is acceptable is what counts as scientific as opposed to religious or supernatural– a matter that is especially apparent in debates over medicine and healing, but that also shows in conflicts over creationism. What's more, political secularism (especially the courts) increasingly turns to epistemic secularism – or science – to justify its positions, showing further that the two are inseparable eventhough they are always in tension.

I am largely confining rationalism to the political sphere, for reasons having to do with the conception of autonomy, morality and rights as described above, and materialism to the epistemic sphere. This is not because rationality (reason) is not a way of knowing the world and therefore not an epistemological endeavour. Rather, it is because, as I just mentioned, at the root of modern secular institutions is an authoritative truth determination system called science, and contemporary, instrumentalized science – especially medical science – has been largely the child of materialism, of empirical experiments and results, of cause and effect, deduction, observable and reproducible effects. Unlike rationalism which can rest on a priori metaphysics, intuition or common sense, materialist science will not rest on non-materialist explanations of phenomena, meaning that something like intuition would have to be explained through something like prior synaptic connections and patterns that are active in the background. However, I also understand that what counts as materialist and what is accepted as scientific can shift and change, and often is indebted to principles and concepts that are themselves not material: forces, fields, wave functions, mathematics...

When institutions of political secularism (law and the state) need support for the determination of a fact or the substantiation of a concept, they consistently turn to science – not to religion, or philosophy (rationalism itself), or to something else. Rationalism, in so far as it appears in contemporary ethics, is appealed to not for the facts or factual determinations, but to make value determinations regarding desirability. Take any of the cases related to personhood, from abortion to PVS to brain death: the commissions and the research that determined the new rules and criteria were scientific, though philosophers and ethicists were engaged to sort through the competing notions of the good.

At the same time, science has in fact not fared well in trying to define and determine some of those key categories, categories like death, life and personhood. Indeed, in the case of death, scientists, medical professionals and philosophers are increasingly agreed that a materially objective determination of death is a *fiction* (Youngner et al 1999; Crippen & Whetstine 2007). There is a continuum of physiological viability along which one's choice of a point for death is not a "natural fact" about death, but rather reflects one's prior ethical, social and political notion of what makes a person (Lizza 2006), a problem underlined by new technologies (Nwabueze 2002:20; Waldby and Mitchell 2006). Political and social institutions, however, must pretend that there is a fact of the matter regarding such categories as death or personhood. Why? In order to "allay social anxiety", in the honest words of the Warnock Commission. The Warnock Commission in England, in charge of assessing the rules about embryo research, emphatically stated that it ended up having to choose not the course that *was right* (which could not be found) but the one that *seemed right to most* and that could at the same time appear justifiable in concrete scientific terms. It chose the 14 day rule on embryo research because certain minor features become *visible* on the embryo at that point. Its solution, the committee itself said, was arbitrary. But it is thought to be in the best interest of the state and the public to officially designate a point, to settle the matter, especially when it comes to matters such as the "inviolability of life". Similarly, the dissenting voice in Roe vs Wade clearly stated that "viability" of a fetus is contingent and can be pushed back with the advent of more precise instruments and techniques. Despite the arbitrariness, "some precise decision must be taken in order to allay public anxiety" (Warnock commission q. in Franklin and Roberts 2006:11). The precision – the picking out of a very specific fact to mark a concept – is not ontological, but social. These decisions and the procedures that follow from them "normalize" an arbitrary

designation, by establishing them on scientific authority and then routinizing them through the institutional procedures of a life-death regime. But that anxiety and the fragility of the whole arrangement is thereby also embedded in the system – in the institutions and authorities committed to implementing the arbitrary designation. When someone or some event then forces a confrontation with the arbitrariness, the life-death regime enters into crisis.

Although so much is predicated on all these concepts, nowhere in US law are death, person or life actually defined (Glenn 2003, Lizza 2006). There are *criteria* that are supposed to be met in *identifying* personhood (presence of autonomy, rationality, consciousness) or the end of personhood, ie. death (absence of heart beat, brain signals) or the presence of life (a certain period of fetal development, biology), but in themselves the concepts are either assumed, (arbitrarily) imposed, or in the case of state regulations, as we'll see in chapters 2 and 3, circularly defined, which may be a virtue.[14] There is neither social consensus on what a person is (and therefore what criteria to use to see whether it is present or not) nor a final, consistent, authoritative scientific, cognitive, legal or philosophical position. The definition of person is not delineated in law, even though the law assumes the person as its subject and recognizes different kinds of persons as being subject to the law – natural persons, for instance, and unnatural persons, such as corporations (Glenn 2003). The discussions and the literature on the concept of persons and the criteria used to determine personhood are "mired in intractable dispute in a wide range of cases, including fetuses, newborns, the irreversibly comatose, God, extraterrestrials, and the great apes" (Beauchamp 1999). Technology, by separating person and death from a live, human body, has further muddled "traditional ideas of the person as conscious, reflexive,

[14] Eg the Michigan Public Health Code (Act 368 of 1978 333.2803): "(1) 'Dead body' means a human body or fetus, or a part of a dead human body or fetus, in a condition from which it may reasonably be concluded that death has occurred."

embodied and ontologically distinct from machines or technological procedures" (Kaufman 2000:70). Obviously Roe vs Wade or the Uniform Determination of Death Act (UDDA), eventually adopted by most states, did not settle matters simply by enshrining them in policy or law. In fact, it is because they are made into law that they are being contested every day in political, conceptual and legal ways.

The trouble is that these categories are constituted by a range of mental, social and physical phenomena that can't be cleanly reduced to each other. Neither research nor technology have helped much. To the contrary, these attempts have had the reverse effect of opening up categories like death to multiple interpretations, even within the same medical epistemology, and thereby pushing it into zones of ambiguity. It is through these reconfigurations that new senses for them have emerged and become part of social life.

Hence in the variety of "legal fictions" associated with the human body, an arbitrary designation, or fiction, is "normalized" by lending it authority through scientific commissions, and then channeling it through the procedures of a secular regime. The law appeals to science to determine its categories, to maintain its fictions.

All of this leaves a void around the determination of death, the social absence of the person, and the experiences and narratives of those who remain – but a void about which, on a very practical level, something has to be done. And, concomitantly, what is done – all the ceremonial fanfare and moralization and pain and grief and burial rites etc. – seems somehow *excessive*, especially if examined from something like a bat's point of view, since no other animal seems to do anything remotely resembling what humans do with death and dead bodies (not even those grief-stricken elephants on the Discovery Channel).

Of course, a society or group could reasonably just move on and not do anything about a member's death. So another person died. Let us dispose of the corpse and move on without much fanfare, just as other species do. Yet, virtually no human society in the world behaves in this way, though a few come intriguingly close. A few hunter-gatherer tribes studied by Woodburn (1982) come close to simple corpse disposal. There are no afterlife beliefs, no fancy rituals. They cover the body, acknowledge the fact of death, sometimes spend a moment "remembering" the person and move on. These hunter-gatherer groups are also the ones with the fewest permanent material possessions. Thus, Woodburn argues that elaborate death rites are a function of property ownership, settlement and hierarchy. The greater the possessions, the greater the fuss over their redistribution after the person's demise. Ditto for social status.

Yet, even in such cases when there is no burial as such and no beliefs pertaining to the dead, there is still a commemoration in which the *person that was* is "remembered". Human death *is* peculiar in this respect: we don't just expire; rather, one way or another, with fanfare or not, our death is socially declared and processed. If there is anything universal about the social event we call death, it is that unlike animal death, human death has generally demanded some extra work, some form of judgment about when death has occurred (Wartofsky 1988), when the person has left the world, which is almost always followed by a social and cultural process of *transformation* that changes the *status* of the living, conscious person – be it to a ghost, a cadaver, an ancestor, or even to newer categories such as Permanent Vegetative State (Kaufman and Morgan 2005) – and that permits the *acknowledgement* of that change, while *managing* its consequences, in terms, for example, of the redistribution of goods, responsibilities and authority once held by that person (Goody 1962). There is nothing absolute or stable in any of these processes – including in the scientific concepts and criteria guiding the determination of death,

which have changed considerably (and controversially) over the years (Zaner 1988, Lizza 2006, Merkle 1992). So attempts at definition may be better understood as means of demarcating jurisdictions, and outlining domains of authority over certain objects, procedures, rights and even people. In this sense, too, one can speak of a regime – specifically *a life-death regime through which the transition between two states of being, life and death, is evaluated and processed in society.*

What should be clear by now is that death is complexly entangled with other crucial and seemingly evident categories that have proven to be normative and socially unstable – life, death, personhood, and human. In the US, these tensions underlie a number of salient and long-standing conflicts: abortion, euthanasia, Physician Assisted Suicide (PAS). As new medical technologies intervene increasingly in the beginnings and ends of life through such procedures as organ transplantation, brain scans, amniocentesis, and preimplantation genetic diagnosis (Dumit 2004; Rapp 1997; Lock 2002; Franklin and Roberts 2006), and as biotechnology is rapidly producing new, hybridized forms of life (Haraway 1998), these matters have become both more salient and more contentious. But because conflicts surrounding them have been politicized along very common modernist lines pitting religion against secularism, tensions internal to secular claims have been largely neglected in the analysis and conceptualization of these conflicts. Discussions that problematize the liberal position have tended to focus on issues of tolerance and conflict resolution in order to try and make room for other points of view (for example, Jones 2007), rather than focusing on systemic schisms in secular space between secular modes of knowledge and politics. Similarly, much recent political theory and philosophy has acknowledged the problem of value and conceptions of the good life without recourse to transcendence, but the solution there has been a weak recourse to pragmatism where important modern concepts such as

dignity and right to life are weakly naturalized through references to "common sense", "basic values" or "consensus" (for example, Dworkin 1994, 2010, Habermas 2002, Rawls 1997). In this work, I will be examining what happens when the radically different views of personhood, life and death are presented, not through challenges that can be qualified (or sequestered) in terms of a "religious exception", but are rather thrown down from within the the secular domain itself.

Political Forms of Technological Life and Death

The materialist approach to the human as a constructed (rather than created or transcendent) body, made up of isolatable and therefore manipulable parts, all the way down to the cells, prompted the stunning developments we have been witnessing in medicine, and more recently biotechnology. This success, or perhaps it's best to refer to it as efficaciousness, has fed the contemporary dream of scientific immortality. Our technical ability to intervene into biology is unprecedented. But ultimately biology is insufficient, in as much as the body is insufficient. What is important, after all, is the self or personal identity: what must continue is me and my consciousness, my memories, my personality, my self (all of which, by the way, are recent concepts for referring to non-biological aspects of the human agent).

"The dream of immortality", of course, is much older than these recent experiments. But in the context of new technologies – in biology, but also in the related fields of nanotechnology, informatics and cognitive science, known together under the acronym NBIC – that are daily upending long-held assumptions, confusing ontological categories and generating unending reams of ethical pontification, the possibility of an indefinite extension of the human life span has turned into a technoscientific and social project. The consequence has been a sharply divided and lively debate regarding the desirability of such a prospect. The divisions have also blurred

older political delineations of right and left, conservative and liberal, suggesting that the politics of bioengineering, or more broadly of the information-based sciences of NBIC, heralds a different species of politics and a different politics for the species.

People as far apart as Francis Fukuyama (2002) and Jurgen Habermas (2003) concur that we are standing at a great moral and political brink. Other writers and social scientists have raised flags over the prospects of a new eugenics and the dangers of seeking individual "perfectability" (Hogle 2003, McKibben 2003). These arguments, which often take place under the rubric of "enhancement", go beyond ethical concerns over issues like distributive justice, and focus on the threat of a total and dangerous transformation of our "human nature". As "life" and "death" change, so does the "human"; and as they change beyond recognition, so will the human. For liberal humanists, this is, by definition, bad news.

For another group of scientists, activists, technophiles and ethicists, this is good news. Breaking up the category "human" is an opportunity to transcend our "natural heritage" and its limits (Bailey 2005, Kurzweil 2005). For them, the transformation of human nature is not a betrayal of the enlightenment, but its extension, an occasion that must be embraced.

Whether or not such a nature or essence exists or may be identifiable, the obvious fact is that seemingly stable relationships between life and death are being altered, breaking up the cultural and biological integrity of the category "human being" and the social rights that have ensued from it. We are going through a *disanthropic turn* in Western political morality, such that these concepts, once pinned to the human species as the modern hallmark of humanistic politics, are now very much detached from the human – and not just for transhumanists or roboticists. They are increasingly considered as attributes that must be valued and protected regardless of whether they arise in humans or animals or, indeed, machines. Animal rights, multi-species

concerns and deep ecology are amongst the new sites of rights talk based on shifts in ideas about personhood and agency. And as the US Supreme Court decisions on corporate personhood have demonstrated, one need not be a Trobriand Islander to confer attributes of personhood on non-human entities.

The current controversies and debates over radical life extension have somewhat blurred the old divisions in the personhood, life and death debates (also see Horrobin 2006). The vast majority of both conservatives and liberals are united in their opposition, while the advocates are a loose bag of libertarians, atheists and technotopians carrying that mix of ardor and naivete common to evangelists. It would seem that extending life should fit perfectly well within the ideals of modern society, with its respect for life endowed with innate value, and its fetishization and medicalization of youth, health and longevity (Fox 1977); intuitively it would seem like radical life extension would be supported by both conservatives and liberals alike. So why such opposition? Anti-Immortalists argue that death is natural, that it allows us to find value in life and it is our response to it that makes us human. Thus, at bottom, they see radical life extension as a threat to our being human – by which they mean human in a specific sense – and its technology, like much other "enhancement technologies", as an inherently ill-fated meddling with "nature" – by which they ignore the technologies that they like and use against other parts of "nature".

Well, wherever we find Fukuyama and Habermas together, it must be as the strangest of bedfellows, meaning that some new politics must be in the making – a new alignment of ideologies and factions, based on different expectations, identities, even temporalities. Transhumanists and immortalists tend to view these alignments as a simple divide between religion and materialism, which is to ignore the range of views in between, as well as the fact

that many of the opponents of Immortalism are not religious at all. Many agnostic and even atheistic – ie. secular – humanists (eg Habermas) fiercely oppose extreme biotech interventions and tend to demonize the hubris of reaching for immortality. There are other ways to map the realignments. Transhumanist sociologist James Hughes (2004) has contended that a new politics outside the left-right axis is emerging which, because technology will constitute the main terms of debate, and because technology will produce altered beings that must either be acknowledged as citizens or not, will be split along "luddite" and "technophile" axes. In order to avoid a two-class sytem of enhanced and unenhanced beings, Hughes proposes a "social democratic transhumanism" that would ensure the just distribution of future technological enhancements. More broadly, scholars like Petryna (2002), Rabinow (1996) and Rose and Novas (2005) have outlined the emergence of a new biology-based politics, sometimes examined through the concept of "biological citizenship", referring to policies and experiences of inclusion and exclusion based on health and illness, and sometimes analyzed in terms of the concept of "biosociality", which suggests that organized groups of citizens have coalesced, become active and occasionally formed identities based on shared somatic or genetic status. Immortalism does not exactly fit either of those categories, though with its pathologization of health and its active membership seeking a future somatic status, it shares affinities with both.

Foregoing the alarmist tones of Habermas, Fukuyuma, Kass and others, a number of scholars (Rose 2007, Rabinow 2003, Knorr Cetina 2005, Franklin 2003) acknowledge that biotechnology is altering the terrain of politics, but rather than invoking a politics of total control, human obsolescence and eugenicist domination, they suggest that biotechnology confronts us with experimentation and the emergence of new forms of life and death. Even as we are inhabiting forms that have little precedence, they argue that these forms are nevertheless

being circulated, socialized and incorporated, rather than taking us over, and are constantly submitted to processes of regulation. So rather than screaming about a runaway science led by a legion of Drs. Frankenstein, we ought to analyse *how* these forms of life and death are being given meaning and value, how they enter regimes of regulation, who is benefiting and what new configurations are emerging as a result.

The discussions around and practices of Immortalism have not been the subject of such an approach. Focused only on the abstract end result – the elimination of death – the discussions tend to be influenced by the discourse of bioethics, taking positions based on an abstract morality regarding the value of life or the significance of death, usually along with speculative, decontextualized projections of the future (eg. Schloendorn 2006; McKibben 2003). Neither side has examined the actual practices and experiences that have emerged through the immortalist movements as they have instituted specific programs, techniques and procedures, largely in reaction to contextual opportunities or obstacles, such as the available technologies, ideological and discursive fields, existing laws and the assumptions embedded in these. Sharon Kaufman (2005) and Nik Brown and Andrew Webster (2004) have shown how a complex assemblage of technical and ethical experts made up of physicians, nurses, medical technologies, relatives and family members, judges and courts, politicians, etc., interact to define, often in contradictory ways, what "good death" and "good life", or quality of life, mean. I attempt a similar outline of the landscape in which Immortalism has arisen and is operating. How is this movement responding to and emerging from local social arrangements? What histories and contexts do they draw from and react to? How is the claimed objectivity of their science and the normative claims and desires of the movement articulating with each other? How (and where) have immortalists determined, negotiated and practiced their alternative view of what constitutes life and death?

What effects and consequences do immortalist practices have on their own lived lives, their own commitments? And what might they tell us about the social assumptions undergirding mainstream norms and laws regarding death, life and the time after death? What kinds of forms *for* (and questions about) life and death are emerging as a consequence of their engagements?

The Ism in Immortalism

Immortalism as a whole consists of three main science-based strategies to radically extend the survival-time of personal identity: cryonics, bio-engineering or biogerontology, and Artificial Intelligence. The small but growing Immortalist movement built around these strategies is composed of a large number of interconnected groups, with different approaches, practices and agendas, but achieving radically extended lives through technical and scientific means is a primary aim of all of them. Some groups and members advocate rejuvenation therapies through molecular biology and engineering, others through uploading of identity to artificial neural networks, while others place their bets on Cryonics and nanotechnological reanimation. They prefer a Do It Yourself (DIY) approach over institutionally-embedded scientific work, which they deem with suspicion because it is subject to unnecessary government regulation, academic inefficiency, and corporate interests, marked by a shallow vision, narrow research goals, and careerism. Their own work, by contrast, is seen to be urgent, committed, efficient, visionary. They also are suspicious of professional science in part because professional science, as we'll see, has been suspicious of them.

Still, the groups are all highly science-oriented: their membership is generally a combination of scientists, doctors, engineers, researchers and lay persons with a very good knowledge of science. The premises of immortalist strategies, from cryonics to biogerontology to

artificial intelligence, tend to start off on strong scientific ground. Cryonics is based on a series of demonstrated facts, for example that cold can preserve tissue viably or that people have been revived from periods of hypothermia during which they would have met all legal and medical criteria for death; biogerontology is based on the fact, discussed above, that life spans turn out to be not biologically fixed but subject to interventions at different levels, including the genetic and the molecular; artificial intelligence models are based on the rapid spread of computer power and the increasing "intelligence" of software systems. The basic facts Immortalism derives its vision from can be quite compelling. From that ground of facts, however, Immortalism lifts off into the thin air of speculation, specifically speculation about the possibilities of *future science*, a category entwined with and shaped by visions of contemporary as well as future society and politics.

Immortalism depends on a social imaginary – that is, a particular way in which Immortalists imagine the society and the universe they inhabit (Taylor 2004:6) – the values they share in it, the moral order it contains, the elements that constitute it and the symbolic order through which it is experienced and portrayed. In the Immortalist imaginary, then, contemporary society is permanently perched towards a technoscientifically driven future of promise in which the limits of inherited biology will be broken. That vision of future science, however, shapes the contours of present practice and forms "immortalist selves". Thus, "immortalist culture" happens in a space of anticipation, a phenomenological and temporal space suspended between the unfortunate present and the idealized future, the third space of Immortalism in which all depends on the opening up of a closed secular future.

The immortality movement in general, and cryonics in particular, are predominantly US-based. Whilst quite diverse in many respects, they have emerged through a number of local

cultural points of contact: science and science fiction, libertarianism and individualism, American pragmatism and optimism, and a historical tangle of millenialist thought and technological utopianism. They in turn change the context by opening up new scientific, medical, conceptual and political realms of possibility and danger. They are affected by and to some extent affect debates and policy in the American regimes of life and death, debates over euthanasia and Physician Assisted Suicide (PAS), withdrawal of life support, abortion, embryos, stem cell, and, finally, debates over enhancement and biotechnology.

Despite the promises, so far none of the approaches have yielded serious concrete results in terms of a dramatically extended human life span. So while most of these ideas are still very much in the realm of the imagination, two points should be kept in mind: a/ the technoscientific projections themselves are playing a part in generating new promises and discourses, thus helping to outline the terms, expectations and values of the immortalist imaginary; b/ the technoscientific projections produce new objects, subjects and practices, raising a set of new challenges and anxieties, often challenging the wider "culture of life" (Knorr Cetina 2005). Thus, even as both the broader group involved in radical life extension and the specific sub-group of cryonics members are relatively small and operate outside of the mainstream of science, medicine and other disciplines, they allow us to analyse *how* these new forms are being given meaning and value, how they enter regimes of regulation, and what new configurations of knowledge and subjectivity are emerging as a result.

Amongst all life extension activities, cryonics, the practice of preserving a person at low temperatures with hopes of reviving them at a later date with better technology, stands out in so far as it has at least already created its own unique and contentious entity: the cryopreserved body, which is considered neither dead nor alive, but in suspension, waiting for the possibility of

reanimation. So while I will explore the other strategies and discourses, my fieldwork focused mainly on cryonics and the cryopreserved body. Treated as not dead, as still a potential person, by cryonicists, it embodies, if the term may be permitted, all the challenges and contradictions of personhood looming for what some have come to call a posthuman age. The production and circulation of this body through official institutions and regulations that do not recognise its in-between - suspended - status reveals some of the ontological instabilities and potential conflicts over the cultural categories and the social and legal practices used to understand and manage human life and death, and confer personhood upon a body.

Immortalist activities, events and groups are formed around the ideal of extending life *beyond life*, beyond its current biological limitations, beyond what is seen as its current and contingent instantiation in a biological platform. That is why I use the terms Immortalism and immortalist to denote the movement and its adherents, though the terms are far from clean and simple. In fact, immortalists themselves often don't want to be called by the "I" word. I will defend my use of the term here, beginning with a conversation I had with a life extension researcher who liked but was ambivalent about the terminology of Immortalism.

AF - What's an immortalist?

IM - Someone who wants to live as long as they want to.

AF - Do you identify as an immortalist?

IM - Maybe I wouldn't do that publicly. Maybe that word has to die.

AF - Seems to have stuck.

IM - Yeah. Yeah. If you ask 'Tim' he'll give you the definition of a 'strong immortalist': Someone who is doing everything they possibly can to achieve that.

AF - As opposed to just taking a couple of supplements?

IM - Yeah. That's sort of a weaker immortalist. Someone who doesn't take responsibility for making the future happen. People who figure someone else is going to cure aging, someone else is going to make cryonics work, I don't have to be responsible for it. It's how much responsibility you take to bring about that outcome.

The term 'immortality' is commonly used and is generally understandable and broad enough to be a working label. The strict definition of immortality as the inability to die is too strict and not entirely accurate viz usage. We use immortality in many ways, some of which actually imply or even necessitate death (for example, immortality through works) and others which simply denote an unimaginably long life, irrespective of the potential for death. Also, as I began to argue above, immortality is *not* a concept exclusively used in religious discourse, though in dominant secular discourses it has been tied to religion, indeed has been one of the markers through which religion and secularism are separated. Third, as my discussion with the immortalist above demonstrated, one can make a distinction between "immortality", as a deathless condition, and "Immortalism", as a commitment to certain views and practices oriented towards achieving an unimaginably long life in the future, generally captured by the term immortality, or alternatively by the commitment to end the biological aging process altogether, especially as a way of "making the future happen".

So it is important to make a strong distinction between Immortalism and a more general health obsession and longevity concern in the US, an $88 billion dollar business of botox injections, hormone replacement therapies, extracts and supplements (Weintraub 2010). One major difference may be captured in the distinction between life expectancy and life span. As I explained earlier, life expectancy, being a matter of averages, is a social matter, a matter of

general health, of biopolitics; it rises when the general health of a specific population, defined by class, nation, geography, etc., rises (Marmot 2004). In principle, one can break the limits of a species life span in an individual of that species without greatly affecting a population's life expectancy. Life span, on the other hand, is considered to be biologically limited, it is the genetic hand dealt to the species.

Immortalists are interested in the kind of work it takes to change life spans more than they are interested in changing life expectancy or even extending life by a few years. There are two things to note about this orientation. First, that it privileges the individual over the social, and second, that it is geared towards changing biology itself, transcending its inherited limits, through technology. Immortalists are interested in changing nature's ways, more than our own – or rather to change nature's way in order to change our own.

This is the quality that distinguishes an immortalist from someone concerned with mere health and incremental longevity. **Immortalism is chiefly defined by its active commitment to transcending through technology the limitations that bring about the biological end of a person.** In fact, it is just this quality that represents a major threat for opponents of Immortalism. Their arguments, which often take place under the rubric of "enhancement", focus on the threat of a total and dangerous transformation of our "human nature". Defeating death has come to represent not proper medical research or science, but a Faustian bargain that would turn humans into something else, into long-living unethical machines.

Immortalists do sometimes use cosmetic alterations, creams, vitamins, supplements[15], and fitness regimes that tend to make up the bulk of the youth and health culture. When immortalists

[15] Supplements are a great example of the entanglement actually. Not all Immortalists take supplements, though many do, and some take over 20 a day. The two founders and directors of the supplement company Life Extension

use strategies that seem broadly to fit within these categories, eg dietary strategies and supplements, these are always considered to be back-up strategies until such a time as science and technology might finally break through with the long-awaited innovations. One could posit *a continuum of life extension practices*[16] going from basic care of the body to a technologically-managed drive to extend life beyond its current biological limits. At the same time, one might also posit a point on the continuum where the practices shift categorically. The majority of gym-obsessed, youth-cream addicted, plastic-surgery advocating, supplement-popping Americans do not look forward to preserving their body upon legal death in a vat of liquid nitrogen or uploading their minds onto a silicon substrate and residing purely as a networked self. This sort of practice requires a categorical shift in the understanding of the future, of what constitutes a person, what it is to be human, of what science is destined to achieve, and what is culturally permissible or desirable.

Immortalists are often penned off in a state of alterity by non-immortalists. Those crazy people, those weird people. "Your strange subjects": I have heard this often from colleagues, friends. At a Templeton-funded conference on Transhumanism at the University of Arizona I caused some confusion and disdain by trying to explain the transhumanist viewpoint and social movement to well-known academics who had been chosen to speak about it but had no first hand knowledge of transhumanism. The Templeton Foundation is known for funding attempts to bridge the secular-religious divide, which for them seems to mean trying to defend religiosity in the context of secularism. Within that larger frame, the conference on transhumanism, organized by scholars of Judaism in the religion department, had a very clear agenda. The organizer

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Foundation (LEF) are ardent, veteran Cryonicists, contributing large sums of money to Alcor and Suspended Animation. The latter company was founded and is highly influenced by them.

[16] I owe this point to Murphy Halliburton.

unabashedly abhorred the claims and visions of transhumanism – a strongly atheist movement. She bluntly stated that they were horrifying and unacceptable. The speakers had been selected not to engage transhumanism but to pick it apart. At one point I raised my hand simply to make the observation that transhumanism as a movement is more varied, less unified and more dynamic in its arguments and logic than the speakers were making it out to be. I identified myelf as an anthropologist who had done some work with groups including transhumanists. My identification as anthropologist seemed to have been overshadowed by my tainted connection to actual real transhumanists. The organizer called me 'the transhumanist' in a tone that suggested there was some minor from of evil in their midst. A philosopher who knew me from an earlier meeting, and had invited me to the conference, interjected, not in order to correct the organizer, but to check in with me, publicly. "You are not a transhumanist are you?" he asked trying to contain his sense of betrayal. In writing about Immortalism and transhumanism, my goal is not to redress this perception, it is not to present ethnography as local corrective, though I believe ethnography offers that possibility. This perception (of Immortalism as some otherized entity, some looming evil) is part of the landscape of Immortalism, part of its shape – it is an effect of the structures in which Immortalism is embedded. Immortalism is not some removed sequestered entity. It operates in the same field in which many of us living, working, debating in the U.S. operate. So local ethnography here is a means of understanding a broader field.

Based on the ethnography and my interviews, I suggest four key dispositions assumed in immortalist practices, concepts and ideologies that seem to mark a significant difference from the more common involvements with longevity (it is worth pointing out that many of these are shared with the precepts of transhumanism): i/ techno-utopian orientations towards the future in which human problems are solved not through socio-political rearrangements but the

rearrangement of matter by biotechnology and the informatic sciences; ii/ shifts in secular temporality to counter the sense of human life (individual and species) as a finite, incomplete and purposeless trajectory; iii/ understandings of personal identity in terms of information, producing an "informatic self", a self understood, managed, preserved and improved via the notion of information through strategies like cryopreservation or mind-uploading; iv/ the further use of "information" as a *transontological* concept bridging numerous domains to construct "informatic cosmologies" that portend to address the issue of universal purpose.

The arguments, as well as the key research questions, in this thesis arose through the ethnography itself, through the data as it was being gathered. I started out with a different set of questions, a different interest in the corpse – the corpse as a particular kind of body, as the figure of absence; even more specifically, I was interested in cases of an absent corpse, of a double absence so to speak. When I first encountered cryonics, the practice of preserving legally dead people in liquid nitrogen for future re-animation, I felt it could offer a fresh way into my interests. As I spoke to cryonicists and eventually to the larger group that constitutes the Immortalist community, I kept wondering: what is it about "life" that makes them want so much more of it, what view of life makes them seek an "excess of life"? In other words, my focus on death was being reconfigured around questions of life. But the question was not about personal motives, in the traditional psychological-sociological vein. The ubiquitous, banal assertions by immortalists that life is good and that no one wants to die seemed not so much to offer a motive as a rhetoric – not a very convincing one at that, since by that logic everyone should be hopping on the immortality train, and yet the community, to its own dismay and utter disbelief, remained small and marginalized. The question, then, related more closely to the conditions of possibility:

what concepts of life and death and survival operated in this community? On what grounds, through which techniques and by what authority were they established?

Method

I started my research in Immortalism in 2005. I have since conducted over 60 interviews, some recorded digitally, others written down manually, with a wide range of actors. Many of the actors are involved directly in the immortalist movement: they are activists, scientists, students, engineers, entrepreneurs, families… I have interviewed people who are involved in all three strategies: members and activists in the cryonics movement; researchers and activists who seek to find a cure for aging through molecular biology, usually with some working connection to Strategies for Engineered Negligible Senescence (SENS) and the Methuselah Foundation; and AI theorists, engineers and activists who are part of the Singularity movement.

Immortalists are dispersed throughout the United States and have no significant local community, though a measurable number of cryonicists have coalesced around one of the facilities in Arizona while another group of transhumanists, biologists and artificial intelligence researchers have gathered in the Bay Area and Silicon Valley. I interviewed my subjects in various locations: at Immortalist conferences around the US, at and around cryonics facilities, in the towns where they live and where I happened to be, in their labs, and on several occasions either by phone or on-line. Immortalists, and particularly cryonicists, inevitably carry out crucial interactions with non-Immortalist organizations and actors. Because I was interested in how the life-death transition is managed through institutional regimes, I also tracked peripheral actors as their office intersected with the practices of cryonics. I thought of the points of intersection as nodes in the cryonics pathway. Thus, I interviewed funeral directors, hospice workers, lawyers,

lobbyists, doctors, and insurance agents. Not quite a network relations analysis, I think of this form of ethnography as 'tracking' – the way hunters tracked, by using their senses to find and follow a trail, but also the way Fed Ex tracks, by defining nodes at which a package becomes visible.

As is often the case some of the richest ethnographic data emerged as the interviews spilled over into unstructured discussions or in informal exchanges outside of the interview context (Cook and Crang 2007). Nevertheless, the interviews with Immortalists were loosely structured on a questionnaire covering personal, conceptual and practical aspects of Immortalism:

- The personal section regarded the interviewee's involvement and commitment, personal motives and attitudes regarding cryonics and life extension, and the reaction of colleagues and kin.
- The conceptual aspect regarded each person's ideas about what constitutes death, personhood and their limits, as well as what they think of the status of the cryopreserved.
- The practical aspect focused on practices, that is, what people *do* as immortalists, eg. strategies of life extension, strategies to help better preservation, membership activity, promotional or PR work.

In addition, data from all of the above was also correlated with on-site observations while working at cryonics organizations and attending a number of training sessions, organizational meetings, as well as conferences on life extension.

I have visited the three most important cryonics centers in the United States, the Alcor Life Extension Foundation in Arizona, The Cryonics Institute in Michigan, and Suspended Animation

in Florida (the latter does not store cryonics patients, but only acts as an intermediary, providing logistical support, deathbed care, transportation and research) in order to carry out participant observation. I worked at one organization for over a month, mainly assisting in packing medication kits, but also helping with other matters including one cryopreservation procedure. I have also assisted (briefly and in a very limited capacity because my capacities in that realm were limited) with the set up of a lab and the conduct of a few experiments with molecular biologists connected to a biogerontology venture. I have attended several cryonics training sessions, member gatherings and annual meetings. I have observed (taking notes, interviewing, and carrying out all the other general participant observation duties) over 10 conferences on transhumanism, life extension, and artificial intelligence. In addition, I was given access to internal polls and membership data at several of the organizations.

Given the geographically dispersed membership and lack of community, a great deal of interaction and discussion takes place on-line (including laments over and solutions for the problem of 'community'). Thus, a number of key on-line, public forums constituted an important site of investigation. These included Cryonet, Cold Filter and the Immortality Institute's forums. I tracked and coded significant discussions taking place on-line, according to my interests, specifically marking discussions on the following: personhood, attitudes towards death, views on future life, visions of the social future, personal life extension practices and strategies, and attitudes towards immortality.

By Chapter

Immortalism is socially complex and diverse in many ways, but also shows basic and narrow commonalities in some aspects of its membership (male, technophilic), as well as in its

overall commitments (technology, atheism, individualism). Whilst the strategies for achieving physical immortality vary from cryopreservation to biogerontology to artificial intelligence, the movement is well-integrated in so far as its members and main actors support and advocate for each other regardless of their particular focus, appearing on each others' boards and in conference slates. Importantly, and despite the perceived marginalization, an increasing number of immortalists and a wide array of immortalist themes and positions are becoming part of the mainstream of technological innovation, with many important figures in the development of information-based sciences (NBIC) also being active in immortalist, transhumanist and futurist groups. Chapter 1 describes the history and social context of Immortalist groups and communities, including their membership, practices, techniques, and the key scientific research that forms the basis of their claims.

Chapter 2 explores the ways in which the rules, technologies, and assumptions of life-death regimes, including the immortalist regime, operate in context and how the categories of death, life, and person (and sometimes human) become visible, experienced, understood, embodied and named through them. I argue that these categories are basic to what Giddens (1991) calls ontological security and part of the task of life-death regimes is to normalize them. In a secular reckoning, however, the relationships are inherently unstable because the relationships between body and mind, between biology and personhood, are not properly determined and indeed are in conflict, especially at a time when medical technology is constantly destabilizing ontological certainties. Detailed case studies show how cryonics' life-death regime disrupts the normalizing existential practices and regulations of current dominant secular life-death regimes by producing a liminal zone that heightens the inherent instability and indeterminacy of the life-death transition in contemporary society.

Chapter 3 takes on the temporality of Immortalism and the consequences of the secular elimination of the afterlife. The terms afterlife and immortality are anathema to secular thought: the person cannot survive the body. But I argue that there are many ways in which a person is extended beyond physical death even in a secular setting. Rather than get caught up in the secular-religious divide over these terms, I consider "afterlife" doctrines and practices in terms of their effects on the temporal experience and expectations of lived life. I suggest that the ways in which the immortalist temporality opens up time expresses a direct reaction to the specifics of secular finitude as I have described it, to human life as an incomplete trajectory in an infinite timeline of progress. Without giving up on a secular, scientific standpoint, immortalist narratives open up a personal future in which a person's life may continue and in which a person may continue to develop him/herself and his or her life projects – a prospect closed by the materialist view of death, the elimination of the afterlife, and the sense of incompletion besetting contemporary lives. Whereas death in modernity has been mostly studied in terms of memorialization and memory-making, Immortalism allows us also to consider "death" as an occasion for and a form of future-making.

Chapter 4 outlines the development of what has become one of the dominant life and death scripts in the US: "the good death". Developed initially in reaction to technologized and dehumanized hospital deaths, the norms and ideals of the good death are now dominant in most hospital and other dying settings, as well as in the general discourse regarding death. The good death ideology claimed that technological dying is a denial of the reality of death and that the West is in general a death denying society. What was needed was a compassionate regime of dying that prioritized individual choices. Despite its discourse of *individual* choice, the good death has created new *social* norms and pressures, and has become a different mode of managing

and shaping the process and subjects of death, organized around experiences of painlessness and meaning. The first proponents of the good death were reacting to a post-war context of total death and collapse of the ideal of a good life. The meaninglessness of life was transformed into the meaningfulness of death. Interestingly, it is through the good death ethos and its advocates that a loud and large segment of bioethicists have raised their voice against any attempts at defeating death medically. The arguments and practices of the good death, reified into an ideology, have created an ethics that has provided the foundations for anti-immortalist stances – in doing so, they have also ended up assuming an odd position, having to ultimately contend that "death is good", a position which is actually enabled by a long secular history that links meaning to the human confrontation with death.

Chapter 5 examines a similar reaction to radical finitude but from the opposite end, that is, a response coming from Immortalism. Immortalist narratives of the future reveal a more complicated relationship to both death and life, than the mere urge to self-replicate. Social structural categories – mainly gender and race – are important determinants of the values and attitudes of techno-utopianism, as well as of Immortalism's facile dismissal of the *social* possibility of saving innumerable lives in places where deaths are much more easily preventable. But in this chapter I focus on the Immortalist valuation of life as a contemporary manifestation of a utopian longing. In this regard, I will discuss the importance of the secular combination of promise and prediction for anchoring optimistic visions of the future, central not only to the immortalist strategy and imaginaries but to technological utopias and to the secular and liberal view of politics as well. With Immortalism, I outline a shift in the utopian vision. The reification of life by Immortalism is indicative of the transformation of utopian visions from the social to the molecular level, that is, their isolation away from the state and social levels of secular

authority to the authority of science alone. What we cannot solve socially, we can solve through scientific intervention into matter. Improving the world is a task given exclusively to specific techniques and modes of intervention (basically all that is made available through NBIC).

For immortalists, any such interventions must adhere to scientific principles and be based on a materialist account of personhood. Chapter 6 focuses on Immortalist views of personhood, personal identity and continuity. For immortalists, people are constituted by information, specifically in the brain. This had led to a range of specific techniques and ideas regarding the optimization, storage and animation of personhood – from cryonics' head-only option to space-casting mindfiles. In short, this is an examination of the development of the *informatic self* – a self managed, understood, improved via the notion of "information". Though embedded in scientific discourse, "information" turns out to be a nebulous concept that mainly serves the transontological function of filling in the secular voids and bridging problematic gaps like that between mind and matter.

Thanks to the all-purpose functionality of the concept of "information", Immortalism, along with its related networks, especially the AI advocates of the Singularity, are producing a re-enchanted cosmology, in which cosmological purpose becomes a dominant part of visions of the future. By examining strategies for achieving immortality through AI, the concluding chapter argues that the concept of information applied broadly has produced an emerging informatic worldview. In this view, information is constitutive of all matter and its evolution into complexity and intelligence will spread throughout the universe so that culture will infuse the cosmos in what has come to be known around NASA as "cosmoculture". This describes a re-enchantment of the universe, literally, the whole universe. A final look at this entangled history will suggest that the informatic worldview is not to be dismissed as the fantasy of sci-fi

subcultures, but a cosmology that has been and is being constructed by society at large, through the spread and convergence of the information-based sciences known as NBIC – Nano, Bio, Cogno, Info and Cogno.

Chapter 1
The Making of Immortalism:
A Historical and Cultural Context

The Cryonics Origins

Immortalism in its contemporary form – a combination of DIY research, activism, ideological individualism and futurism, shouldering the explicit hope of moving beyond the biological limitations of the human body and mind – was largely launched through the practice of cryonics, and its current shape owes much to the development of cryonics, even though today, pragmatic anti-aging research programs with shorter-term hopes of success, along with venture capital forays into nanotechnology and some life-style regimens such as calorie restriction, have emerged as the more popularized aspects of Immortalism. These latter strategies are closer to the regular mainstream health and youth practices of dieting, exercising, botox injections and plastic surgery. They also have the added benefit of not creating any categorical or social confusion between life and death, person and thing. The Immortalist movement is founded on a temporal gap. What has fueled it is precisely the not-yet-possible. Predicated on present-day techniques and knowledge, Immortalism is driven by and to a future that seems at once tantalizingly close at hand and yet perpetually postponed.

Cryonics, a proposition older than most people assume, pre-dates all this by several decades, even though it was not called by that name until later. In late 1962, within weeks of each other, two Americans articulated the idea in self-published books, both bearing titles with the word immortality: Under the pseudonym Nathan Duhring, Evan Cooper penned *Immortality: Physically, Scientifically, Now* and Robert Ettinger wrote *The Prospect of Immortalit*y. Gathering

together a range of results from scientific experiments, a handful of principles and some new insights, they both proposed essentially the same thing. Ettinger puts it clearly on the very first page of his book (1965):

"The fact: At very low temperatures it is possible, *right now*, to preserve dead people with essentially no deterioration, indefinitely…

The assumption: If civilization endures, medical science should *eventually* be able to repair almost any damage to the human body, including freezing damage and senile debility or other cause of death…

Hence we need only arrange to have our bodies, *after we die*, stored in suitable freezers against the time when science may be able to help us. No matter what kills us, whether old age or disease, and even if freezing techniques are still crude when we die, *sooner or later* our friends of the future should be equal to the task of reviving and curing us. This is the essence of the main argument."

Though the procedures and technologies, as well as visions of the task awaiting our "friends of the future", have changed, the "essence of the main argument" has remained exactly the same since. It is on some level an anthropologically familiar proposal. Whatever the biology of death, the social body, to paraphrase Hertz (1960), can not let the personal body die in an instant.

As it turns out bodily death is not an instantaneous matter, either. The death of the body is *also* a process. As we'll see later in this chapter, even the tight little traditional window given

us by medical science, of 3 to 5 minutes after respiratory arrest, is not quite accurate: cells die at different rates, especially at lower temperatures and people have been brought 'back to life' after hours of "clinical death". The point at which death was thought to occur has changed in history. Cryonicists argue that clinical death, the designated point at which medical authority recognizes death, only marks the limits of our current technology and knowledge, so clinical death is not the same thing as "irreversible death", even though irreversibility is a necessary property of the concept of death. Or is it? If the body can be suspended before its full irreversible demise, it can wait for science to eventually come up with the proper remedies to its ailments. If death is not irreversible – if the body can be suspended before the body's decomposition makes it non-functional and biologically unrecognizable, for all practical purposes – then "death" is not final and perhaps should not be judged under the criterion of irreversibility.

For Ettinger and Cooper, who had read about recent experiments in cryobiology where animals had been temporarily taken down to low temperatures and then revived, two things were clear and essential: that freezing stops the decay process; and that the future would almost certainly acquire the technological power to cure and re-animate. Two particularly American components, then, were crucial to Immortalism from the beginning: a particular view of death, and a particular view of the future, both of which were freed from assumptions about destiny and tied to optimistic thoughts of human control.

Ettinger and Cooper, two very different men, came up with the same idea, in the same country, at the same time, in the early 1960s. They, and their early followers, immediately thought of it as a revolutionary, world-changing idea, the realization of an age-old human dream.

Evan Cooper, known as Ev, was something of a romantic. An obsessive sailor with a deep penchant for the great works of literature, he numbered Odysseus and Don Quixote among

his literary companions, but seemed to admire most the great books of the 20th Century (Kent 1983). He led a discussion group on this subject and published his own book through a small imprint called *20th Century Books*. More a man of quick action and grand speculation than careful analysis, he had a flash of insight on the possibility of achieving immortality through science as he synthesized a number of influences. These ranged from literature to the social sciences to psychology. But it was cybernetics that provided the true enabling spark, specifically his reading of Norbert Wiener's (1954) *The Human Use of Human Beings*.

Initially in a guarded manner, protecting himself by claiming his proposition as the investigation of a metaphor, Wiener fielded two propositionsparadigms: that a biological organism could be conceptualized as a message, "a pattern", and that the living individual had a parallel in "some of the newer computational machines". The so-called metaphors harden into real propositions as the book progresses, but throughout Wiener continues to use one striking trope to advance his case rhetorically: "death". It is a trope he starts out with: "The metaphor to which I devote this chapter is one in which the organism is seen as message. Organism is opposed to chaos, to disintegration, to death, as message is to noise." He is right to protect himself by talking about this as metaphor, because his use of the term "death" is nothing if not rhetorical. It serves no function in the theory; neither has it served a function, strictly speaking, in cybernetic practice. Though I would think his argument works better without it, Wiener consistently threw "death" in the mix, almost as though he were seeking a dramatic effect. He equates chaos and noise with death, because he sees noise as disintegration and death as the end-state of disintegration. But these are a series of incorrect analogies – noise and chaos can be, indeed are, continuous and infinite and quite fully part of life; they certainly do not lead necessarily to an end-state.

Were it not for Wiener's dramatic metaphor, however, Cooper may never have come up with the idea of cryonics. It was Wiener's constant use of death juxtaposed with the cybernetic idea of biology as message that focused Cooper on to a different sort of vision: "Being a fervent addict of Joyce and Freud, I was well-conditioned to reading into any author, especially Wiener, strange and unusual meanings. I claimed that Wiener's book contained either intentionally or unintentionally… a message about immortality" (1962: 5). Cooper's own book is an impassioned, broad plea, mixing Frazer, Camus, Wiener, Freud and scientific experiments in cold temperature preservation into a proposition on personal immortality via the preservation of the "message", that is, the content of an individual. He considered immortality the apotheosis of "… the individual's freedom to choose his destiny…" (41) Being a sailor, he may have been attracted by that freedom, more than by the scientific venture.

The book was printed in very limited numbers[17] and did not survive much scrutiny. Its patchy science and literary forays stood against it. Not many in the life extension community that would soon emerge seem to be attracted to a thesis on Camus, for instance, generally preferring Asimov, say, or other science fiction. His proposed solutions to some problems were also off base. Cryonicists would not be attracted to the idea that the best place for freezing bodies would be in the ground, in a "permafrost region" in "natural storage", or to the prospect of the United Nations handling their freezing and resuscitation documents. (Nevertheless, Cooper had a few insightful and apposite predictions, the most relevant here being this one: "… we can predict there will be law cases in the future concerning the possible equation of man and communication machine." (57))

[17] Perry, Mike. 1992. "For The Record". *Cryonics*, February 1992.

But there was a practical side to Cooper too, along with an impulse for action. In 1963, just after he published his book, Cooper founded the first organization dedicated to promoting the idea of human cryopreservation and reanimation, the Life Extension Society operating out of the Washington, DC, home he shared with his wife, Mildred. Without wasting time, he set about his work. The LES issued the first newsletters on the subject, eventually named "Freeze – Wait – Reanimate", and Cooper began to recruit people, asking them to participate in seminars and set up local chapters of LES. He somehow managed to get seminars going at places like the Pratt Institute in Brooklyn, NY, with the participation of medical doctors and researchers initially attracted to the ideas of Cryonics (Kent 1983).

Those were heady days, the beginnings of an idea being tested, thrown out there to see if it might stick at all. It could easily have fallen away and withered, as ideas do, and later, through mishaps and bad decisions, it almost did die on several occasions. But for now it seemed that it could have been the ideasomething whose time had come, an idea that, if expressed and presented properly, would attract a lot of followers. After all, thousands of people were dying every day and here was a chance to finally do something about it. A cryobiologist briefly entered the scene, along with some students, a medical doctor, a lawyer, an industrial designer, a TV repairman and others to form branches of Ev Cooper's LES in New York and California. A wigmaker in Phoenix, AZ, future home of the largest Cryonics operation, who bore the appropriate name of Ed Hope, thought Cryonics could make him some money. He formed a company called Cryo-Care Equipment and built the first capsule for the purpose of holding frozen bodies (Nelson 1968).

Despite the burst of enthusiasm from these early participants, though, no one came forth to be frozen. The general lack of response always surprised early Cryonicists, as it continues to

mystify today's members. How could this age-old dream not have adherents?! In the LES newsletter of December 1964, Cooper cried out in disbelief: "Are we shouting in the abyss? How could 110 million go to their deaths without one, at least, trying for a life in the future via freezing? Where is the individualism, scientific curiosity, and even eccentricity we hear so much about?" (Quoted in Perry 1991).

Cooper persisted, galvanizing people's attentions and organizing LES meetings and conferences which brought together some of the main actors in the future of Cryonics. One of these was Saul Kent, a student who would become a central figure in the development of cryonics and its institutions. He had been introduced to the idea through Robert Ettinger's better-known book but met up with Cooper because Cooper had the organization and that is what Kent wanted, somewhere he could be active. Kent took the bus down to DC, with two friends, to meet Ev Cooper and "discuss immortality". Cooper had gathered over a dozen members by then, some of whom were as eccentric and romantic as himself, and all of whom "clearly looked up to Ev as their leader" (Kent 1983). Amongst those Kent and his friends were introduced to was the "Vice President John Prince, a tall (6'7") black man who dressed in 3-piece suits; Bill Albaugh, who was about to run for Congress in Maryland on a 'Freeze-Wait-Reanimate' program (the title of the LES newsletter); and Phil Carlson, who was intrigued with the concept of personal identity and how it might change in the future" (Kent 1983).

Kent and his friends returned to set up the New York chapter of LES, but would splinter off within the year to form their own group, "the first organization to compete with LES", as Saul Kent put it (Kent 1983). At an early meeting of the New York offshoot, Karl Werner, a Pratt student who had attended Cooper's early seminar at the institute, coined the term "Cryonics" to describe the preservation of humans through cryogenic procedures. Thus was born

the Cryonics Society of New York in July 1965. Four years later, Werner would drop out of the cryonics movement to join the Church of Scientology.

LES, too, proved to be short-lived, like so many of the early cryonics organizations, and Cooper quickly became disillusioned with the whole enterprise. Even though by 1969 a few people had already been cryopreserved in California, Cooper dropped out of cryonics altogether, dedicating himself to his other passion, sailing. He was in his 40s by then, without a desire for a fixed job or a stable home. He spent the next decade and a half without a fixed address, sailing his boat *Pelican* up and down the eastern seaboard, finding odd jobs, mainly as a carpenter, whenever he needed one. Some time at the beginning of the 1980s, he collected all his papers, letters and documents and destroyed them. It is not clear why. On October 9, 1982, Cooper's boat moored at Nantucket, Massachusetts was damaged in a severe storm by the wind-dragged anchor of another, larger vessel, whose insurance company, he learned, would probably not pay damages. On October 17, having made some makeshift repairs, Cooper set sail from Nantucket, plying his way around nearby Martha's Vineyard Island, bound for a warmer winter at Beaufort, North Carolina, hundreds of miles to the south. On October 21, he was spotted and hailed by a Coast Guard patrol boat off Wood's Hole, heading south for Block Island, Rhode Island via Vineyard Sound. Everything was fine, he said. He was never heard from again. The Coast Guard conducted a search but no trace of the *Pelican* or its pilot could be found. One of the founders of contemporary Immortalism could only be presumed dead.

Cooper wrote the first book and set up the first organization, but Robert Ettinger is generally credited with doing the best early writing and more generally with founding cryonics. In part, that is because Ettinger stayed at the core of cryonics, founding one of the two most important and lasting organizations, the Cryonics Institute, and writing other books since his

first. Also, having earned MAs in physics and mathematics, he was more attuned to the necessities of scientific, rather than literary, rigor. His book was much more thorough and studied from a scientific point of view; it did not sound speculative like Cooper's and was much more grounded in the biology of the matter rather than Wiener's computational ideas about the self.

Born in 1918, Ettinger almost lost his life in battle in World War II. "On the day I was wounded," he wrote, "I was a second lieutenant, directing mortar fire. I had to stand up to see. The rifleman next to me was prone – as of course he should have been – but the same shell that got me through the legs got him through the head and killed him. It was just dumb luck" (Ettinger 1994). That incident is cited often by Ettinger and seems to have been formative in his moral and scientific thinking. If life, death and survival were the function of nothing but "dumb luck", well, "dumb luck" had better be eliminated from the mix.

Honored with a purple heart, Ettinger spent four years in hospital recovering, reading, thinking – and writing his own science fiction story about freezing and immortality, published in a small magazine in 1948. But he was not satisfied with stories and was determined to "do something about this freezing business" since nobody else was. That determination led to research, which led to his groundbreaking book.

According to Ettinger (1994), he first outlined his idea in a brief pamphlet of 3 or 4 pages which he sent out to a random list of people taken from *Who's Who in America*. There was no response from any of the "whos" so Ettinger decided he needed to explain the matter more fully. That's how he got to writing a book, instead of a pamphlet. In 1962, he published his own book and began to correspond with Evan Cooper. In the mean time, he sent his manuscript out to several publishers, a few of whom showed interest but not enough to take it on. An editor at

Double Day finally thought the book could sell some copies but wanted it to "be stamped kosher on the scientific side" (Ettinger 1994). To have its science evaluated, the editor sent it out to Isaac Asimov, the science fiction writer, who was reaching the zenith of his career by then.

Asimov, like most other science fiction writers, liked cryonics as an idea to play with, but never became involved in the movement. In fact, according to Ettinger (1994), he was against it, mainly on the ethical grounds that immortality would entrench power even further in existing men and institutions. Still, the science seemed sound to Asimov and he gave Ettinger the kosher stamp. Double Day, a major publisher, finally issued the book in 1964. For a short while after its publication, the book enjoyed wide popularity, eventually getting translated into 11 languages. Ettinger got some media and press attention, too, his first major TV appearance being on Johnny Carson. What better introduction could the idea hope for? As a result of the exposure, a range of people seemed to have expressed interest, amongst them Arthur C Clarke (author of *2001: A Space Odyssey*) and Stanley Kubrick (director of the film adapted from Clarke's book) who passed Ettinger's book around to his friends. But in the end Ettinger's frequent TV appearances and all the early articles on the subject did not yield any significant gains in terms of the number of adherents for the small, budding groups who could not shake off labels like "science fiction fantasy".

Images of Possible Futures

Immortalism and cryonics are commonly dismissed as science fiction. It is true that science fiction is a formative influence on cryonics and a continuing part of the culture. At one cryonics organization, I worked to the daily roar of the theme music to Battlestar Galactica. Ettinger grew up an early fan of science fiction, as did many other early cryonicists. Many

current members refer to science fiction as their portal into the practice of cryonics and life extension, and cite it as an important influence on their current thinking. Conversations are more easily had about Star Trek than Fellini, Asimov than Camus. Versions of "cryonic" freezing (in blocs of ice) and reawakening have appeared in American fantasy and fiction works since the late 1900s, often mixing a number of themes about the frontier, exploration and futurism. The earliest may be the 1887 story, "The Frozen Pirate", by the explorer William Clark Russell in which sailors in a pirate ship are discovered frozen in blocks of ice. Much later, in 1931, a writer by the name of Neil Ronald Jones sent a frozen protagonist into space. An eccentric, Professor Jameson arranged to have his body after death sent into space where it floated, preserved by the cold vacuum until an alien race found him, revived him and stuffed him into a robotic exoskeleton that allowed him to live forever in an aging-free environment. The story, called "The Jameson Satellite", was published in the July 1931 issue of a pulp science fiction publication, *Amazing Stories*. That issue made it into the hands of a young boy by the name of Robert Ettinger. It was his first exposure to the idea of cold temperature preservation and immortality.

The point is not to invalidate cryonics or other immortalist strategies as sci-fi fantasy adventures. Rather, I want to emphasize and re-imagine the oft-made claim, that "Science fiction and fiction were by now hopelessly blurred" (Roth 2005: 51). The "blurring" idea has often been taken in a particular direction, to examine how fantasy – ie the unreal, the "merely imaginable" – has taken on a "real" role in people's lives who inhabit a mediated environment founded on illusory claims such as those made by alien abductees or contactees. It then proceeds to the next step of interpreting what the stories are *really* about (eg race, paranoia, etc). The tendency to zone off science fiction as illusory fantasy is, as Battaglia (2005: 14) points out, in part due to the way "contemporary discourse privileges the affective force and cultural and historical thematic

of fear over optimistic imaginaries and social strategies of hope." Additionally, the notion of sci-fi as fantasy or illusion gains emphasis in contrast with science's necessary cordoning off of its domain as a privileged realm of pure facts and evidence, which ought not be tainted by such things as fantasy. It is through that domain management that science gains and maintains its authority and effectiveness. Yet, that is far from the whole story. Fantasy has ever been part of scientific inquiry and science fiction was (and sometimes continues to be) an effective strategy and medium for projecting possible futures that did not yet have corollaries in the material, present world, nor at first a non-fiction genre to express those possibilities through. As Ev Cooper explicitly wrote, "more and more we rely on 'images of possible futures' to achieve our goals" (Cooper : 60).

"Images of possible futures" came in a variety of interdependent forms, combining scientific achievement, science fiction imagination and technological prediction. That combination of forms not only blurred the boundaries between science and science fiction, but also provided a platform for a futurology wrapped in promise. In the American imagination, "possible worlds" appeared uncannily real just as once the continent itself had appeared out of nowhere, outside of time and space, a real possible world, and home to a wide range of imaginaries for possible futures, including thousands of utopian communities. The most glaring example of the thorough mixing of these realms is Orson Welles' 1938 radio prank, in which he read HG Wells' 1898 *War of the Worlds* as though it were a news report, triggering wide-spread panic amongst people who by then could well consider an invasion from outer space as a distinct and real possibility. Through the 1940s, Asimov and Heinlein popularized science fiction as a quintessentially American genre, making both space and robotics a central feature, one that admittedly had its roots in the older *War of the Worlds*, with its Martian landing and hi-tech

equipment. Welles's prank was a prelude to the contemporary UFO and flying saucer phenomena, whose origins – including its terminology and iconography – can be traced back to the same magazine that triggered Robert Ettinger's imagination, *Amazing Stories,* and a later editor, Raymond Palmer. Taking a reader's letter of one Richard Shaver, in which 'factual' claims about contact with alien figures had been made, Palmer transformed the purported facts into a sci-fi story called "I Remember Lemuria!" (Roth 2005), triggering an overwhelming response from the readership. Placing the first image of what would later be called a "flying saucer" on its cover in September 1946, *Amazing Stories* continued to exploit the theme to great effect. Palmer had accidentally tapped into the needs and fantasies of thousands of people who were writing letters to the magazine giving testimony to their own version of a Lemurian encounter. In 1947, the merger of science fiction and science non-fiction found consummation in the form of an alien spacecraft whose crashed remains were said to have been found in the desert of Roswell, NM. Science fiction, once a genre of storytelling, became the generator of research (Ufology), expeditions, conferences and paranoias that persist to this day at that site and many others. What was called science fiction was clearly serving a function beyond mere fantasy and storytelling.

The most important and widespread cross current of science and science fiction was and remains space travel, in which scientific achievement caught up with science-fiction imagination. By the 1960s, when Ettinger and Cooper began writing, Yuri Gagarin had become the first man to enter orbit, followed by John Glenn, the first American to do so, and the Soviets had already landed an unmanned craft on the moon. For the first time, going into space, reaching the moon, such things as had only been the subject matter of fantasy and mythology, were all of a sudden within the reach of technology, migrated from the realm of the imagination, or science fiction, to

the realm of the real and the possible. That trajectory, from science fiction to reality and back, the blurring of the boundary between the *merely imaginable* and the possible, was paradigmatic for the American imagination. Space was, as Star Trek would claim in 1966, "the new frontier" and humans could "boldly go where no man had gone before". Today, space travel and space colonization are an integral part of immortalist strategies as they imagine scenarios for survival in the distant future.

Boundaries of the Possible and Epistemological Limits

Through the 20th century, the boundaries of the possible, which we can think of in some sense as epistemological limits, were being expanded by an unprecedented growth in scientific experiments whose results were changing the outlines of our understanding of biology, life, matter and the universe in radical ways. They were changing the way the world could be thought of and the way it had been posited. Appropriating a phrase used by one of Battaglia's subjects, one could say that there was a series of "epistemological shocks" (2005: 10). Images of a landing on the moon would qualify as would the reality of a person's heart beating in another person's body. As often said, these were once only imaginable in science fiction.

So it was, in large part, science itself that was doing the blurring between genres and modes, as well as between ontological boundaries. Perhaps this can be traced back to the very beginnings of Western science itself and Francis Bacon, one of the fathers of the modern scientific method. Aside from his experiments and his writings on science, in 1626 Bacon also published *New Atlantis*, a futuristic utopian work of fiction in which voyagers discover an ideal island (off the coast of Peru) where the central institution is a state-led house of scientific research dedicated to the betterment of human life (Bacon 2008). It is also to the point to

remember that, more recently, HG Wells studied physics, zoology and geology at the Normal School of Science in London before he became a science fiction writer.

Through the 20th century, a good number of scientists and engineers have not only been reared on sci-fi but have had parallel careers as sci-fi writers. JD Bernal, physicist, mathematician and Marxist philosopher, is best known in science as the originator of x-ray crystallography, a field dedicated to the study of the molecular composition of crystals through the use of x-rays. But he was also obsessed with immortal life and the improvement of human biology through engineering (Bronwin 2004). In a 1929 treatise, mixing science, prediction and social prognosis, he presents the first rendition of what we now call a "brain in a vat" – the extraction of the brain and its preservation in an "artificial" environment in which it might continue to function and indeed be improved upon. The idea that the brain is the true seat of the self and, more, that the brain can function independently of the body if properly preserved, is entrenched in immortalist ventures today, both in the form of cryonics' neuro-option, in which only the head or brain is cryopreserved, as well as in the AI strategies of whole brain emulation and uploading. Another relevant and more recent example of a scientist mixing science and science fiction is Vernor Vinge, a mathematician and computer scientist at San Diego State University, who is also a Hugo-Award-winning science fiction writer. But it was in a science non-fiction lecture at a 1993 symposium sponsored by NASA that he made his lasting contribution to the futurist and immortalist communities. Vinge laid out a predictive scenario in a half-troubled, half-ecstatic tone, declaring that "within thirty years, we will have the technological means to create superhuman intelligence," after which events will become completely unpredictable and "the human era will be ended". Vinge called his threshold the Singularity, a term from mathematics and physics that describes an event horizon past which

things will change so radically that the consequences are incalculable to current forecasters. The Singularity (the subject of chapter 7) is now not only a popular concept but also a techno-social movement with links to the NSF and NASA.

One has merely to consider the scientific sources for Cooper's and Ettinger's books to realize the extent and range of the "epistemological shock" that was activating "images of possible worlds". To consider this is to realize the kind of zeitgeist synthesis that gave birth to Cryonics. By the time they wrote, cybernetics was well on its way, proposing to build "intelligent machines". In the 1940s, the mathematician and early computer scientist John von Neuman proposed a theory of cellular automata, merging biology and systems theory, while Norbert Wiener, considered one of the fathers of cybernetics, was writing at the same time about parallels in communication systems between animals and machines and Claude Shannon had imagined the human genetic composition in terms of information. The Macy Conferences, organized explicitly to explore foundations for a scientific understanding of the human mind, brought together psychologists and anthropologists (Bateson and Mead) with mathematicians and systems theorists who were already discussing how computers could "learn". The early cybernetics pioneer Grey Walter, who had made goal-oriented electro-mechanical turtles seeking out power outlets to "revive" themselves, published his popular book *The Living Brain* in 1953 and Marvin Minsky at MIT was writing about Artificial Intelligence in the 1950s. (He later became a transhumanist and is now an avid cryonicist.) The merging of man and machine was being proposed in more popular publications such as *Scientific America*n which published several articles on the topic in the 1950s. So long the seat of human exceptionalism, the marker of human consciousness and will, the ontological boundary separating what humans were and what nature was, the organic human brain was being presented as a performing machine, turning

the conscious subjective human into nothing more than a set of response mechanisms, "performative stuff in a performative world" (Pickering 2009). And if a merger between mind and machine, organic and non-organic, was possible, if on some level human identity could be translated into other processes, then our concepts of personal identity could be, had to be, re-imagined. Both Cooper and Ettinger tapped into the potential offered by this line of thinking very early on, each suggesting in their own way a continuation of personal identity beyond biological death through some version of non-organic or Artificial Intelligence (Ettinger:129-133; Cooper: 17-19).

Artifice and The Human

As a term, "Artificial" – from "artifice", meaning man-made as opposed to "nature" and "natural" – was not limited to machines or forms of computation. Just to take references to it from Ettinger's 1964 book, we come across artificial respiration, artificial insemination, artificial organs, artificial limbs and, finally, artificial man (which makes his first appearance in the book on p. 131). So many things were being artificially induced or created that all of life and biology itself now could be thought of as replaceable by "artificial" means.

This was the culmination of a transformation with roots in the history of biology and medicine that led to two new conceptions of the biology of life and living beings. On the one hand, there was what Martin Pernick (1988) calls the "decentralization of the person", meaning that the old unity of the living being was being broken up so that life could be regarded as itself a sort of artifice or a mere "appearance", as one 18th century pathologist reportedly exclaimed (Pernick 1988). Pernick places the beginnings of this trend in the mid-18th century. The French naturalist and mathematician, Comte de Buffon, for example, claimed, against both Descartes'

immaterial self and the idea of an integrated vital principle, that the life of an organism was the result of a wide range of living molecules acting together. German physician Christian Hufeland stated that death was simply the gradual disintegration of an organism's structure. And Xavier Bichat similarly thought of the body as distinct tissue types each contributing to the whole. By the early 20th century, work on organs as separate, replaceable, entities was well on its way. The first eye transplant came as early as 1905 and by the 1920s Alexis Carrel, biologist, eugenicist and Nobel Prize winner, was preserving organs outside bodies using a perfusion pump that would become the model later used for preserving organs before transplant. The pump was designed by and co-produced with Carrel's partner at the Rockefeller Institute, Charles Lindbergh, the first man to fly across the Atlantic. It was their common interest in 'immortality' that provided the grounds for their collaboration.

Alongside this "decentralization of living beings", came what one could call the "engineering ideal" of the life sciences (Landecker 2007:10, taken from historian Philip Loeb). Carrel was a key figure here too. His most famous experiments consisted of his work with embryonic chicken cells, which he isolated and maintained for 20 years in a flask, claiming they divided and reproduced as long as they were given the necessary nutrients. The chicken's cells thus outlived the chicken. Carrel had an avowed interest in immortality, and his chicken tissue experiments were an attempt to prove his hunch that immortal cells did exist and that rejuvenation was possible (Landecker 2007; Friedman 2007). In a Time Magazine article from 1925, we read this intentionally jarring juxtaposition in the headline: "Science: Physical Immortality". The article is about Professor Carrel's experiments as reported to the magazine by Professor Green returning home to Manhattan after a stay in Europe where he examined Carrel's experiment with chicken heart tissues. Professor Green was reportedly so excited "he could not

keep talking with a ship-news reporter". Professor Green exclaimed, "Dr. Carrel introduces immortality in a physical sense. It is there before your eyes, and so long as this tissue is nurtured and irrigated it will live. It cannot die."[18]

The mainstream press was effusive about the prospects of immortality. *The New York Times* headline called it a "Miracle" that "Points Way To Avert Old Age", while *The World's Work* was more symbolic: "Flesh That is Immortal". Carrel's experiments led to an outpouring of applause from colleagues in the field of tissue culture, and inspired a series of – what else – science fiction ruminations, another case of science generating science fiction.

This was the first instance in which immortality was introduced to the world "in a physical sense" (Landecker 2007: 101). And if one sort of flesh was immortal, then others could be too. For decades after, the idea that cells were immortal remained an exciting dogma, accepted to such an extent that when cells did die in labs, their death was attributed to mistakes in the technique by scientists themselves (Hall 2003:26). In fact, the opposite was the case. Carrel's cells remained "alive" thanks to experimental sloppiness: feeding the cell cultures with nutrients taken from freshly killed chicken embryos, experimenters were accidentally supplying fresh new cells to the culture, creating the illusion of immortality in cells. At the very end of the 1950s, biologist Leonard Hayflick noticed that cells seemed to divide a finite, not infinite, amount of times. In fact, others had come across the same phenomenon, but had blamed it on their own sloppiness in the lab, simply scrapping the sample and starting over again in order to be in accord with the accepted results. Hayflick, however, was convinced that this limit on cell division was not a function of experimental sloppiness but intrinsic to cell biology itself, or

[18] Time Magazine. 1925. "Science: Physical Immortality". Nov 30, 1925. http://www.time.com/time/magazine/article/0,9171,736596,00.html (last accessed Aug 20, 2009)

"senescence at the cellular level". His first attempt at publishing the results of his observations was famously rejected, but eventually, after publication of his paper in 1961, it was Hayflick's conclusions that became accepted dogma in cell biology. Most normal cells – with the exception of cancer and germline cells – divide up to about fifty times, after which they stop dividing and wither away. This limit is known as the Hayflick limit. Whilst Hayflick's discovery put an end to the dream that cells in general were inherently immortal (malignant cancer cells remain an exception), it had the virtue of linking cell research to aging research, cellular biology to gerontology.

Despite Carrel's mistakes, the isolation and reproduction of cells outside of the body and inside of a laboratory nevertheless indicated at one and the same time the technological ability to intervene into cells and the concomitant transformation of cells into technologies, of life into artifice and back, indicating that the difference between the two was itself an artificial one.

It was this isolation of the parts of life, this way of being able to see life as an "engineering ideal", combined with the emerging cybernetic view of mind (Dupuy 2009), that really provided the impetus for thinking of life, not as something to be observed and classified in terms of appearance or function only, but as "molecular structures" which could be broken up and read – ie reverse engineered – and then manipulated again. The concept of a gene, as a unit of heredity, goes back to Mendel's experiments on plants, long predating biochemical research into genetic structure. But it was only in the 1940s, when biological interactions started to be "translated" into chemical equations, that genes began to be thought of as information or a message. In fact, it was the father of information theory, Claude Shannon, who years before Watson and Crick gave shape and content to DNA, first equated genetic data with information, thereby turning biology, or life, into a message, a code.

This conception of genes also arose in part due to the main subject of experimental interest of the time, namely how genes were transferred or copied (and why in some of this process there were errors). Thus genes were conceived as "codes" for other parts of the cellular structure, specifically for the generation of proteins and it was shown that this code or information was being carried by a deoxyribonucleic acid or DNA in the cell. Fifty years after Carrel's prize, Crick, Watson, and Wilkins received the Nobel in 1962 for *deciphering* this code. The presentation speech of the Nobel Prize committee, echoing Shannon's and Wiener's cybernetic words, described the double helix as a staircase which "contained a kind of message, the genetic code", helping us to "understand one of the most vital biological processes," namely "the unravelling of the details of the control and transfer of genetic information".[19] Life, like mind, would henceforth operate like a computer program, built on and transmitting and receiving information and therefore being subject to interventions and corrections.

As it became more "decentralized" and "informatic", that is conceived in terms of and manipulated as bits of information (Canguilhem 2000), biology itself had slowly come to be regarded as an artifice, a bricolage that could be dismantled and reassembled in bits and pieces, merging it with design so that, as Foucault's mentor Georges Canguilhem (1988: 118) put it, "Life is now studied as far as possible as though it were non-life, as devoid as possible of its traditional attributes."

Deeply attuned to the relationship between essence and technology (Heidegger's main topic), Hannah Arendt was amongst the first to consider the cultural and political ramifications of all these transformations in 1958. She opens her book *The Human Condition* (1958/1998) with

[19] Presentation Speech by Professor A. Engström, member of the Staff of Professors of the Royal Caroline Institute, http://nobelprize.org/nobel_prizes/medicine/laureates/1962/press.html (last accessed August 30, 2009)

the image of the first spacecraft in orbit, the first man made object "launched into the universe," linking it on the next page to attempts at creating life in a test tube, moving from infinite space to finite sperm and back. "The human artifice of the world separates human existence from all mere animal environment, but life itself is outside this artificial world, and through life man remains related to all other living organisms. For some time now, a great many scientific endeavors have been directed towards making life also 'artificial', toward cutting the last tie through which even man belongs among the children of nature. It is the same desire to escape from imprisonment to the earth that is manifest in the attempt to create life in the test tube… and the wish to escape the human condition, I suspect, also underlies the hope to extend man's life-span far beyond the hundred-year limit.

"This future man, whom scientists tell us they will produce in no more than a hundred years, seems to be possessed by a rebellion against human existence as it has been given, a free gift from nowhere (secularly speaking), which he wishes to exchange, as it were, for something he has made himself" (Arendt 1958/1998:2-3).

In fact, the connection between explorations of space and biology, inner and outer space, had already been made before, specifically in relation to immortality, by the collaboration of Carrel and the aviator Charles Lindbergh. For Lindbergh, who by crossing the Atlantic in a heavier-than-air craft had achieved what people had long called impossible, the link was about the possibility of achieving dreams and transforming and realising human potential. "The success of aviation, rearrous[ed] my interest in biology… If man could learn to fly, why could he not learn to live forever?" (Friedman 2007: 21) Here was an anthropological statement: immortality as a problem of learning, of discipline; to live forever is to learn to live forever. But what exactly would one be learning?

Setting aside for now Arendt's political and metaphysical project – to try and map out the ethics of this new world – the link she creates between the space program and earth-bound scientific experiments especially in the "life sciences", a link that was culturally formative and has remained vital, was not a genealogical link that tied disparate disciplines together through an epistemic shift (Foucault's strategy), but a meditative one about the transformation of the conditions under which humans could conduct their lives and imagine their futures. Arendt identified the tension between the boundedness of the human condition (biological body, mortality and socio-political destruction) and the unbounded human potential (imagination, calculation and power), unleashed in the wake of massive projects such as the atomic bomb and the space program, launching – or perhaps renewing – a desire, perhaps a rebellious desire, as she puts it, to be more than just human.

Arendt's prescient passage can be glossed as an outline of transhumanism, with its desires and contradictions, a tension between the freedom "man" has to make, to be an artificer, and the end result of that freedom which would make of "man" an artifice of his own making. *The Human Condition* was actually outlining the end of the human condition.

"Artifice", as something set aside from nature and made by man, is thought of by Arendt, as by many humanists, to constitute the opposite of nature, and thus to be in contradictory tension with the category human – an artificial human, in this equation, is no human at all. It is just this problem – the so-called "artificiality" of the immortalist and transhuman projects – that appears as a threat to many people. To use a phrase from Donna Haraway, what seems to be at stake is "the story of the human place in nature" (Haraway 1991:217). But in fact the informatic shift, in which biology or life, became subject not only to artifice but to decoding and recoding, was presaging something more radical and less disarticulated. The concept of information, and

the bio-technological merger it has enabled, in fact *re*-connected human not only to animal but to all matter – thereby making the idea of nature redundant. What was revealed as artificial was merely the concept of artifice. As we'll see in the final chapter, foregoing the split between nature and artifice, Immortalists and Singularitarians are in fact reconnecting, via the concept of information, the human to the entire universe, a connection that had been severed by science's projection of a cold universe indifferent to the subjective meanderings of a conscious, lonely creature.

Of Fowl and Semen: A History of the Science of Freezing

Alongside the wider cultural landscape, smaller technological shifts and inventions actually enabled the project of cryonics on a practical level, leading, in 1967, to the first controlled, intentional freezing of a human being for possible reanimation. Whilst Carrel's experiments with Chicken heart cells may have fired up the imagination and effectively made immortality a scientific project, it was the smaller and very practical developments in what became the science of cryobiology that laid the foundations for the real possibility of freezing human bodies. Again, the origins perhaps go back to the very beginnings with Francis Bacon. There is a famous account of Bacon traveling through the snow with the King's physician when he is suddenly hit with inspiration. Snow, he realizes, could perhaps preserve meat. But it being Bacon, the hypothesis had to be tested by experiment and as soon as possible. The two men jumped out of the coach, found a woman who sold chicken, bought and disembowelled one and stuffed it with snow. The chicken may have kept well but, it was said that the cold made Bacon come down with a bad case of pneumonia which soon thereafter killed him, a martyr to his own scientific methodology.

In the 17th century, scientists became fascinated not by preservation but by the effect low temperatures seemed to have on the life and death of organisms. In 1670, Henry Power reported success in freezing and reviving vinegar eels and a decade later Robert Boyle, apparently inspired by Bacon's experiment, noted similar success in experiments on frogs and fish (Thomson 1964; Parry 2004). Boyle and others noted two problems with freezing at the time. The first was their inability to control, reproduce or maintain low temperatures artificially. The second was that certain frozen goods like plants, fruit, vegetables and organs seemed to be damaged after thawing (Parry 2004; Liebo 2005).

The first problem would be solved in the 19th century with the development of refrigeration, used for storage and transportation, particularly of meats. But it was the liquefication of gases achieved by several chemists at the end of the 19th century that would change the landscape of low temperature experiments and usher in the era of cryogenics proper, meaning the study of the behavior of matter at ultra-low temperatures. Amongst these chemists was a Scot, James Dewar, who liquefied hydrogen, and developed a vacuum-insulated storage capsule that could contain liquefied gases without allowing them to rapidly evaporate (Parry 2004; Liebo 2005). Today's cryogenic storage devices, called dewars, still bear his name.

Although experiments on the effects of cooling on biology continued to take place in the early part of the 20th century, the research was not formalized until a Roman Catholic priest began his experiments on the survival rates of frog and yeast spermatozoa in the 1930s (Schmidt 2006; Parry 2004). Born in a Swiss mountain village, Basil Luyet emigrated to the United States in 1929 with doctorates in biology and physics from Geneva (Schmidt 2006), later taking up a position at St Louis University and setting up the American Foundation for Biological Research, a laboratory designed to study low temperature phenomena, at which he conducted the majority

of his work on cryopreservation (Liebo 2005; Schmidt 2006). For Luyet cryogenics was a way into a larger question that had long held his interest: what is life? "To study and to know life I started to study death since death is the destruction of life," he said in an interview (Mulvenna 1974). Observing that life could indeed be restored, that animation could cease and restart, his interest changed to an in-between concept, which he introduced into the study of life: "latent life" and the prospect of restoring "animation" to "latent life". The problem Luyet faced was the main problem of cryogenics, namely the damage done to cells as a result of ice formation during the cooling process that destroyed a great majority of cells (though not all), as a result of which tissue and organs did not thaw viably. Luyet speculated on some solutions: rapid cooling, dehydration and the use of certain materials as "protectants", all of which he mentioned in his comprehensive 1940 study of cryogenics, *Life and Death at Low Temperatures*, a book that established him as the "father of cryobiology". Although Luyet's proposed solutions would prove to be the right ones in principle, in practice, he himself never solved the problem of freezing injury and cell damage.

An experimental mishap involving chicken semen helped solve it. Spermatozoa had become the focus of low temperature research since the 1930s when two biologists experimented extensively with rabbit semen. In the late 1940s, the Frenchman Jean Rostand used glycerol to freeze and thaw frog sperm but did not test its subsequent fertility (Liebo 2005). The various food industries were the main interested parties in these techniques, having understood the potential for controlled fertilization and artificial insemination. In 1947, the poultry industry in the UK charged Dr Christopher Polge with the task of developing sperm preservation and artificial insemination techniques for fowl (Liebo 2005:357). The team he worked with at Mill Hill near London included Alan Parkes, who would coin the term "cryobiology" and Audrey

Smith, who would come to be known as the "mother of cryobiology." They were later joined by James Lovelock, responsible for accidentally inventing the microwave oven, and developing what is today known as the Gaia hypothesis. Polge had his chemicals shipped to him at the Mill Hill labs and went about freezing chicken semen using what he had always used in such experiments as a protectant: fructose. Previous experiments with semen had yielded very poor results. After thawing, only up to 5% of the cells remained viable. Yet all of a sudden, Polge and his colleagues were repeatedly obtaining a 50% rate of viability. Having exhausted the old supply of fructose, the team turned to a brand new supply. The rate immediately dropped back down to the expected 5%. Intuitively and correctly, they deduced that something must have happened to the old bottles of fructose. The last few milliliters remaining in an old bottle were sent to a lab where proper analysis showed they had in fact been filled with glycerol not fructose. The bottles had been mislabeled.

Thus by accident glycerol became the first effective cryoprotectant. It and other such substances revolutionized the practice of storing and reviving cells. These could now be frozen and stored at ultra-cold temperatures for very extended periods before being revived. Today's tissue and sperm banks, along with practices of artificial insemination, embryo preservation and assisted reproduction, owe their existence to these developments in cryogenics. So aside from being the main experimental 'subjects' of cryobiology, spermatozoa also have been the main beneficiaries of low temperature research as shown by the proliferation of human sperm banks and the extensive use of cryopreserved semen in animal husbandry.

In the 1950s, Audrey Smith, James Lovelock and Alan Parkes turned their attention to freezing and re-animating small mammals. Using glycerol as a cryoprotectant, they cooled 20 golden hamsters down to a colonic temperature of -5 degrees Celsius for 50 to 70 minutes before

rapidly thawing them (with an apparatus made of material from military radar and reassembled by Lovelock, that became the basis for microwave ovens). Of the 20 frozen hamsters, seventeen survived the thawing process, with seven of these dying within 24 hours of reanimation, two within ten days, and eight living out the rest of their days close to their species' normal life span (Parry 2004). Kept at a colonic temperature of only -5 degrees for no longer than an hour or so, the animal was not frozen through and through. That is, not all the water in the animal's body had turned to ice – intracellular ice formation having been identified by then as the clear culprit in causing cell damage during the freezing process. In subsequent experiments in which they tried to keep animals frozen for more than 70 minutes, the animals rarely recovered. They also discovered that animals frozen at ultra-low temperatures did not survive either. The only conclusion they could reach was what they called "suspended animation", or the long term storage of animals and their subsequent revival, had no prospect (Parry 2004: 404).

But these experiments were enough to convince early cryonicists, especially Robert Ettinger, that suspending humans was in theory quite possible, the difference being a matter of complexity and scale, and not of principle. Indeed, once Ettinger circulated his manuscript, it was enough to convince one of the pioneering cryobiologists mentioned above, Jean Rostand, who contributed an optimistic preface to Ettinger's book *The Prospect of Immortality.* Impressed by Ettinger's plan for human suspension, Rostand wrote, "we don't have long to wait before we shall know how to freeze the human organism without injuring it. When that happens, we shall have to replace cemeteries by dormitories, so that each of us may have the chance for immortality that the present state of knowledge seems to promise" (Rostand 1965:9).

The First Man Frozen

The fledgling cryonics movement of the 1960s, desperately seeking its first volunteer, its first frozen man, its first proof of concept, finally got a boost from an unlikely source: an optimistic ex-prize fighter turned TV repair man in California. That boost soon would turn into a multi-faceted disaster, establishing a pattern of uplift and downfall, of daring-do and litigation, of secrecy and exposure, in the cryonics movement.

Actually, the story doesn't quite start with a California prize fighter but with an Arizona wigmaker bearing the serendipitous name of Ed Hope, mentioned earlier, who at some point in the past had been commissioned by the federal government to teach wigmaking to Native Americans (Nelson 1968:18). From the profits of that trade, Ed Hope got into a number of other businesses and in 1966 predicted that Cryonics would become the next big thing, the new method of interment. The main source of profit, Hope thought, would be the manufacturing of storage capsules, which he built immediately, selling the first version to a NY businessman. In another capsule, he held the body of a frozen woman whom he claimed as the first person ever frozen. The woman had requested "cryogenic interment" but the family was strictly opposed. Her son, who had rights over the body, caved in to family pressure and the body was embalmed upon death. Only after the embalming (and probably the public viewing) did the guilt-ridden son try to abide by her mother's wishes. Somehow he found Ed Hope and his CryoCare Equipment Corporation, where she was taken to be frozen. The already embalmed body was cooled down and placed in one of Hope's cryocapsules. Though a number of similarly undesirable preservations have occurred since, cryonicists do not consider this the first freezing since it was never intended as a proper preservation with the intention of reviving the patient. Indeed, a year later, the woman was removed from the Cryocare capsule and buried in the ground.

One state over, in California, Robert Nelson was getting excited by Cryonics at around this time. With a handful of others, he ran the very new Los Angeles chapter of the Life Extension Society. As a repairman who dealt daily with television sets, Nelson knew the importance of media attention. He "decided that the first thing to do would be to expose as many people as possible to the idea, and that the ideal medium for this would be television" (Nelson 1968:16). He immediately secured a TV appearance on the Lomax show. That show and a brief visit to Phoenix to see Ed Hope convinced Nelson that cryonics would have to become his full time occupation (Nelson 1968:22) – meaning he had to set up his own operation. On December 16, 1966 the Cryonics Society of California was incorporated by the state of California. A month later, CSC would freeze the first man.

Nelson's insistent press conferences, radio interviews and contact with print media, even before the first freezing, did not garner much in terms of membership growth, but they did draw some key figures into the mix. One of these was an Italian immigrant MD and biophysicist, Dr Dante Brunol (in his book, Nelson refers to him under the pseudonym Mario Satini). Brunol thought that the basic premises of Ettinger's proposal were scientifically sound and at the insistence of Nelson developed the first detailed cryonics protocol for preserving humans, aimed at limiting damage and protecting the body as much as possible (reproduced as an appendix in Nelson 1968). Brunol's medical background was crucial not just in the proper development of the first protocol but also in lending credibility to the project, a fact to which Nelson seemed to have been quite attuned. In consultation with Ettinger and other early cryonicists, Nelson attempted to put together a scientific advisory board for CSC and refer as much as possible to published and accepted science. Brunol's own protocol referred itself to a recent experiment carried out in 1966 by a Japanese scientist, Dr Isamu Suda, who had shown that cat brain slices

perfused with glycerol and frozen down to -20C for several months, recovered cellular as well as electrical activity after thawing. Suda's experiment quickly made the rounds of cryonics and was referred to repeatedly. Though the first activists were themselves not scientists, it was clear to those early pioneers that scientific credibility was crucial. The problem was that the feeling was not mutual. Scientists and doctors were not so eager to jump on the cryonics bandwagon. In fact, it was even difficult to get morticians to cooperate. In the first freezing case, the mortuary reneged at the last minute and two doctors who had initially agreed to be on the CSC advisory board resigned the moment the prospect of an actual freezing moved from theory to reality (Nelson 1968: 45-47).

That moment came with a phone call from a California mortician to Robert Nelson. A young man by the name of Norman Bedford was desperately seeking "cryogenic interment" for his father, Dr. James Bedford, a University of California psychology professor with metastasized kidney cancer. The 73-year-old Dr. Bedford seemed adamant about his desire to be "cryogenically interred" (the term used at the time). At some point in the past, he had contacted Bob Ettinger and now that his death was imminent, Dr. Bedford was prepared to do everything possible to be frozen. An understandable sense of excitement rippled through the CSC; but also, and all of a sudden, a great sense of anxiety, a realization that perhaps they were not fully prepared, and even worse, that they did not really know what being prepared meant. No one had done this before. This was not the same thing as freezing golden hamsters or cat brain slices.

Glendale Memorial Hospital where Dr. Bedford was a patient refused cooperation with a cryonics project, according to Dr. Bedford's son (Nelson 1968:37). So they turned to a nursing home run by friends of the Bedford family, Raymond and Mildred Vest, a Seventh Day

Adventist couple[20]. They also needed an attending physician to cooperate by officially pronouncing death when it would arrive, thereby changing the legal status of the patient from person to corpse. That person would be Dr B. Renault Able, who had attended a few LES meetings, but who despite his agreement was tentative throughout the whole event, according to Nelson's account. Dr Brunol's protocol outlined the perfusion of the body (replacement of its liquid contents, the goal being reduction of the water content and substitution of an antifreeze agent) with perfusate consisting of dimethylsulfoxide (DMSO) for protection from ice formation. A pump of some sort was needed for the circulation of both oxygen and these chemicals through the body. Once these were secured (Bob Ettinger's Cryonics Society of Michigan sent a Westinghouse 'iron heart', or cardiac compression machine, to act as a pump), the team felt almost ready, though Dr Bedford's death came sooner than expected. Nelson had only just picked up the chemicals (from the Matheson company) and had stopped on the way back for coffee when Dr Bedford suffered cardiorespiratory arrest.

There were no cell phones back then, so Nelson, Dr Brunol and another crucial member of the team, Robert Prehoda, arrived late. In the mean time, as per Brunol's protocol, Dr Able and Mr Vest administered CPR to keep the brain oxygenated, then packed ice around the patient on the bed to start a slow cooling process. When the rest of the team arrived, Brunol began administering the DMSO solution.[21] Some hours later, the process was deemed complete. It was time to move the body, a legal and logistical problem for which the team was only partially prepared. The final destination was Ed Hope's CryoCare Corporation in Phoenix, where it would

[20] Darwin, Mike. 1991. "Dear Dr Bedford (and those who will care for you after I do)". *Cryonics*. July 1991. Reprinted on the Alcor on-line library at http://www.alcor.org/Library/html/BedfordLetter.htm. Last accessed July 30, 2010. Based on interviews and subsequent conversations, Darwin contests Nelson's account, especially regarding the administration of the DMSO perfusate solution.

[21] "Robert Nelson Speaks: An Interview with David Pizer and Mike Perry". *Physical Immortality* 2 (2), 8-22 (2nd Q 2004); orig 3 installments *Venturist Monthly News* (May, 1990; Aug. 1990; Apr. 1991).

be stored in a capsule at liquid nitrogen temperature. For the transport to Pheonix, Ed Hope had sent over a plastic waterproof shipping container, much like a coffin. Wrapped in a blanket in order to prevent ice burns, the body was transferred to the container and stuffed with dry ice. But by law a body can only be shipped by a mortuary, with the approval of the state or county coroner, based on a signed death certificate.

The certificate was eventually signed by Dr. Able but several days would pass before all the required signatures were obtained, a mortuary assigned to the task, and final transport arrangements completed. During that time, the box containing the body moved from the nursing home to the Bedford's living room to Prehoda's garage to the back of a station wagon and finally back to the garage (Nelson 1968). This brief nomadic purgatory foreshadowed a longer itinerant afterlife for Dr Bedford[22]. After two years at Hope's CryoCare facility, the family decided to move him back to southern California to be stored at a cryogenic equipment manufacturer called Galiso, where in April 1970 he was transferred to another storage capsule. (Hope's CryoCare unit had a leaky vacuum jacket and required pumping to "harden" its vacuum and reduce its boiloff rate.) Galiso kept Dr. Bedford in its southern California facilities until 1976, when their liability insurance company got wind of it and threatened to cut Galiso's coverage unless the body was removed. Bedford's son, Norman, who with Bedford's wife was footing the bills, placed his father's body in the back of a U-haul and drove up to a newly formed for-profit cryonics organization, Trans Time, in northern California. The body stayed there for a year, but the high storage charges at Trans Time forced Norman and his wife to withdraw. Placed again in the back of a U-haul, Dr Bedford was driven down to southern California and kept by his son

[22] The remainder of this account relies on Darwin (1991), op. cit., ftnt 5, Nelson (1968) and Perry, Mike. 1991. "First Suspension No 'Blue Sky' Event". *Cryonics*. July 1991. Accessed July 30, 2010 from http://www.alcor.org/cryonics/cryonics9107.txt

and daughter-in-law for several years in a self-storage warehouse, where they did their best to replenish the liquid nitrogen. Finally, in 1982, the Bedford family agreed to trust two newly formed cryonics organizations, Alcor and Cryovita. Though Bedford is still cared for by Alcor (which has assumed all costs of storing him), the first relocation to Alcor would not end his peregrinations. Very soon, Alcor's and Cryovita's liability insurance company withdrew coverage, which in turn led to the termination of their lease. After that, Alcor relocated twice, once to a facility in Riverside, California, and later, after more legal problems in California, to Phoenix, Arizona, where Alcor is currently located. In the early years, Bedford's family sued to retrieve the body and, possibly more to the point, regain the money Dr Bedford had set aside for his freezing and for further research into cryonics. The entire amount of Dr Bedford's bequest (aprox US$ 100,000) was used up in legal fees defending the bequest itself.

Immediately after the first freezing, Nelson and his team were in touch with the media, which had gotten wind of the story and were hungry for priority coverage. For its high circulation and great reputation as much as for the appropriateness of its title, *Life* magazine was deemed the best choice of publication. After negotiations over privacy, rights to photographs taken during and after the preservation, and a series of interviews, the cryogenic preservation of the first human was slated to be published the first week of February, 1967. On January 27, during a pre-launch test, the Apollo 1 space rocket caught fire at Cape Kennedy and three leading astronauts died. Though *Life* had already printed and shipped 2 million copies of the Bedford story, it pulled the rest and substituted the death of the astronauts as the lead story. A chance at immortality had been trumped by a story of death, a story about one sort of futurist success had been substituted by a story about the tragic failure of another.

The *Life* magazine story is often retold in cryonics circles as a 'what might have been' narrative. How things might have been different if the piece had run and everyone in America had heard about Bedford and cryonics through *Life* magazine! A deeper hue of tragic regret spreads over the story in light of Nelson's subsequent actions. With the help of a sympathetic mortician, Joseph Klockgether, he froze another 9 people after Dr Bedford, but for want of money did not manage to keep them in liquid nitrogen. The bodies, which by then had been moved to an underground vault purchased by Nelson in a cemetery in Chatsworth, California, were eventually left to thaw. Nelson had not informed anyone – including members and board of the Cryonics Society of California – of the conditions. An attorney by the name of Michael Worthington heard about the situation indirectly, while vacationing on a beach. He approached the family of a Canadian girl entrusted to Nelson for preservation, and in June 1979 smashed open the lock on the vault at the Oakwood Memorial Park Cemetery in Chatsworth, exposing the horrible conditions under which the bodies were being kept. Joined by other family members, Worthington sued and the case went to trial in 1981, eventually finding against Nelson and Klockgether, who were assessed damages amounting to almost one million US dollars. (Klockgether's insurance paid his share of $400,000 but Nelson negotiated a settlement out of court and did not pay damages.) The event horrified not only the general public but also other cryonicists who had been unaware of Nelson's tactics. Nelson withdrew from cryonics vilified by many in the community (he did eventually return, though no longer in charge of an organization). The one who made cryonics history became an outcast, persona non-grata. The whole incident came to be known in cryonics as the Chatsworth Disaster.

Robert Nelson's controversial story has been told in numerous places. His own account of the first freezing was published right after the event under the very literal title *We Froze the*

First Man (Nelson 1968) and he has subsequently attempted to defend and redeem himself repeatedly (claiming that he acted out of compassion, but none of the families paid the money they were supposed to pay)[23]. A number of cryonicists have conducted interviews with Nelson and published their own accounts of the Chatsworth events[24]. More recently, Nelson was the subject of a story on National Public Radio's popular This American Life[25]. The story was heard by the renowned documentary director Errol Morris who has bought the rights to Bob Nelson's story. (So Nelson's story starts on television with the Lomax show and ends back on the screen with Errol Morris.) The acrimony, betrayal and pathos of the events foam up in all these tales, each told from a particular perspective.

The immensity of the Chatsworth disaster swallows up other contemporaneous cryonics developments, but Neslon was not the only one attempting cryogenic preservation in those early years. The Cryonics Society of New York (CSNY) froze seven individuals through 1974, all of whom were kept frozen for brief periods only and eventually either returned to their families for reburial or, in two cases, transferred to Nelson's west coast operations.[26] CSNY's first freezing – of the 24-year-old Steven Mandell – interestingly attempted to use a life insurance policy as a way of financing the costs, with CSNY as beneficiary. As far as I can tell, this was the first attempt to use life insurance for cryonics purposes. In this case, however, the insurers managed to renege on the policy, on grounds that the life insurance money could not be used to freeze the

[23] Nelson, Robert. 2005. "The Early Days: My Side of the Story". *Cryonics*. September 2005. http://www.cryonics.org/immortalist/september05/bobnelson.htm
[24] For example, see Platt, Charles. 2005. "Robert Nelson and the Chatsworth Scandal". *The Immortalist* (now *Long Life)*. November 2005. Accessed July 28 from http://www.cryonics.org/immortalist/). Also Darwin (1991), foot note 6 above.
[25] Shaw, Sam. 2008. "You're As Cold As Ice". Audio report in *This American Life #354: Mistakes Were Made*, originally aired 04.18.2008 (http://www.thisamericanlife.org/radio-archives/episode/354/mistakes-were-made/).
[26] Perry, Mike. 1992. "For the Record: Suspension failures, Lessons from the Early Years". *Cryonics*. February 1992. Accessed July 31, 2010 from http://www.alcor.org/Library/html/suspensionfailures.html

deceased's body and since the person it was meant to benefit was in fact "dead", there was no "insurable interest" in this case. CSNY's mortician took up the costs personally.[27] Despite the "failures", CSNY avoided the legal wrangles of CSC by holding the families responsible for the storage units and dry ice or liquid nitrogen supply, as well as by immediately returning the bodies to the families in case funds were short and there was any possibility of the bodies thawing. Of seventeen documented freezings carried out by all organizations through 1973, all were terminated except Dr. Bedford's.

The pattern of legal problems, family feuds, media disasters, and financial collapse that beset the early history of cryonics has repeated itself almost like a domain pathology. The early cryonics societies all folded – notably Nelson's Cryonics Society of California and Kent and Henderson's Cryonics Society of New York, both of whom had patients. There were other even more short-lived immortalist groups in the 1960s and 1970s that never reached the stage of cryopreserving anyone: *The Immortality Records and Compilation Association* in Panorama City (CA), which was headed by Tom Tierney, later arrested for counterfeiting and gun fraud; the *Society for Anabiosis* in New York, initiated by Dr. Benjamin Schloss, who later shifted his interest to aging research; the *Cryonics Society of Illinois* and the *Cryonics Society of South Florida* both of which folded quickly for lack of funds and direction (See Kent 1983:4; Rievman 1976; Sheskin 1979).

But it was through these early societies that the more stable organizations emerged. The Bay Area Cryonics Society gave birth to Trans Time in 1972. Trans Time carried out its first cryonic suspension in 1974. The Alcor Foundation was started in 1972 in California by pioneering cryonicists Fred and Linda Chamberlain after they broke with Nelson's group. Alcor

[27] Darwin, Mike. 1981. "An Interview with Curtis Henderson". *Cryonics*. July 1981.

attracted a number of committed cryonicists with some background in the sciences; they began to conduct their own 'scientific' experiments in cryogenics, including experiments in animal preservation. Alcor developed and introduced head-only freezing or neuropreservation, with the first such case, of Fred Chamberlain's father, occurring in 1976.

The next public mishap to make it into both the papers and the courts came in 1987 when Saul Kent had his eighty-three-year-old mother, Dora, frozen as a head-only. Terminally ill and demented, Dora was removed from hospital by Saul and died at Alcor's facility in Riverside, California, which prompted a post-facto coroner's investigation. But when the frozen head was demanded for autopsy, it could not be "located". Several Alcor officials were taken into custody pending charges of homicide. Eventually resolved in Kent's favor, the incident left another bruise on cryonics. A few months after this the California Health Department attempted to have cryonics declared illegal—but that too was eventually rebuffed in court. Ironically, it was as a result of this threat, and the favorable outcome of the ensuing trial in California, that Alcor managed to secure a legally legitimate claim to its procedures under the mandate of the anatomical gift act, thereby being protected from such charges in the future.

For its constant misfortunes and bad PR rap, many within cryonics itself often blame the hard headedness of the "cryonics type", the buck-the-trend, independent-minded, stubborn pioneer whose main problem is that he does not care for authority or tradition and just wants to gets things done. That is the kind of person cryonics attracts, and it is repeated in conversations and blogs and listservs. This self-image of cryonicists as pioneers must surely serve its functions, but, even if true, it is hardly the only, or even the main reason, why cryonics seems to be beset by chronic problems, no matter who is leading its organizations. Outsiders as well as some insiders who subsequently have turned critics of the practice point to a lack of professionalism and

transparency, to board members and directors with ulterior motives and self-serving agendas who make false claims about how scientific or professional their procedures are. Some of this is true as well. Alcor, more than the Cryoncis Institute, projects an image of medical professionalism by invoking the presence of MDs and surgeons during cryopreservation operations – often this is not the case, partly because the timing of preservations is unpredictable, but also partly due to an odd inability in cryonics to get professional physicians on permanent staff. Defenders attribute this to the fact that not many professional physicians (or even technicians such as perfusionists) want to be associated with the goriness of the practice; besides, they say, they don't have the appropriate budget. Detractors blame this on the pride and hard-headedness of some of the staff and board-members who think themselves technically proficient enough to carry out the operations.

As should become clear in the following chapters, the problem as I see it is principally attributable to the tense interface between cryonics and the legal and institutional worlds around it. Socially, much is predicated on stable definitions of life and death. When these are muddied, as they are with cryonics, it opens up undefined realms, unclear categories, which very quickly lead to conflict and confusion, especially in relation to outside or mainstream life-death regimes that have settled on their own clear categories. Cryonics, in effect, exists in a chronic state of Turnerian liminality, in constant tension with its settled and stable environs. The liminality allows the practice some elbow room, but also keeps it removed, by definition, from the possibility of 'professionalization' and subjects it to a sense of legal insecurity. Unless the law, and with it the medical establishment, lend cryonics a categorically stable existence – which would basically require a radical re-writing of the definition of life and death and the recategorisation of the cryogenically suspended person as either a patient or some liminal but

legal figure – until that happens, cryonics will remain both medically and legally murky and therefore subject to chronic legal and medical contests. Of course, as is always said in cryonics, it will all be solved as soon as the first person is revived.

Pyramids of Inferences

Decades after the crude preservation of Dr Bedford, there is no incontrovertible evidence supporting the prospect of cryonic preservation and reanimation. It would be difficult to establish such a claim until someone is actually brought back from a state of suspended animation. Until a hypothesis is fully proven it is still a hypothesis. But inference from facts is an acceptable place to start and there are suggestive bits of evidence that at least lend support to some of the premises and some basic aspects of the procedures. The whole venture of cryonics, to which cryonicists have committed their lives and deaths, may have been built on a pyramid of inferences from suggestive facts, but it is important to understand to what extent the inferences themselves are justified.

The inferences and facts are accumulated in favor of two desired outcomes. The first has to do with the preservation of a person for long periods of time and the second with the future reanimation of that preserved person.

In the first case, what is required is evidence that would directly or indirectly support the premise that a "person" may be "stored" without further decay or damage such that his or her personal identity remains substantially intact, including memory, personality, preferences and so on. This premise is further complicated by the social fact that any kind of intervention to initiate preservation of the person may only legally be made *after* the legal declaration of "death". In other words, given current social rules and norms, for cryonics to be reasonable within its own

premises, a set of facts and inferences must be found to suggest that legal death is not the final end of the person, that clinical death is not absolute death. Given what we know about biology, including the relationship of the body, brain and personal identity, and what we have seen in death-like events such as accidental hypothermia, there is evidence to suggest that a person declared *legally* dead may not be *irreversibly* dead. But is it possible to intervene at a particular point to arrest the process without further decay? In the absence of incontrovertible evidence from reanimation, is it reasonable to assume that as a result of certain kinds of timely interventions, the "person" may at least be preserved or suspended in a not-irreversibly-dead state until further notice?

Preservation itself has two stages – the first is the initial intervention and stabilization, to be carried out as close as possible to legal death, to prevent or minimize further decay or damage; and the second is long-term storage or cryopreservation in stasis, without any further change in the long term.

The goal of cryopreservation or cryostasis is simply to arrest biochemical activity for the foreseeable future in order to prevent further decay, degeneration and decomposition in the body and brain structure. If the body at death is somehow kept just as is, then it can wait indefinitely for future science to achieve what it needs to achieve in order to bring about reanimation. It's a familiar process. We are always "preserving" biological matter for later use. Strawberries in the fridge, hamburgers in the freezer and semen in a fertility clinic are being preserved for later use. Hamburgers are kept at mildly sub-zero temperatures where biochemical activity is minimized but not entirely halted, which means that eventually the meat *will* go bad, whereas semen or

embryos in deep freeze at liquid nitrogen temperatures (-196 C)[28], where there is almost no biochemical activity, where biological time virtually stops, have been kept frozen for years.

The problem with freezing is ice. When you freeze a fresh strawberry, for example, and then defrost it, you will notice that the strawberry is mushy and discolored and not quite in the same fresh shape as the strawberry you froze. This is because the water in the strawberry cells turns into ice, and ice molecules form into hard, knife-sharp crystals like ninja stars. These molecular ninja stars form in the space between cells and cut into the strawberry cell membranes, damaging them for good. Since the early 1950s, cryobiologists have used glycerol and other agents with similar properties to achieve ice-free freezing. These agents minimize ice formation and only harden or vitrify into a glass-like state rather than forming sharp crystals. Cryoprotective agents have been successfully used to protect semen, eggs and sometimes animal organs during the freezing process. Upon thawing, the cryoprotectant is washed out and, ideally, the sperm continues on its path to new life as though nothing had happened in between, during that state of suspension. That's ideally. In actuality, it is hard to achieve consistent results. Experiments show that frozen sperm is not as active, fertile or lively as fresh sperm[29]. Nevertheless, the process for embryos and semen is functional enough to produce acceptable results for human fertility clinics and animal breeders.

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[28] Temperature makes a difference. Sperm loses motility (the power to move) at a much greater rate when stored at -70C than at -196C. (H. Trummer, K. Tucker, C. Young, N. Kaula, R. Meacham. 1998. "Effect of storage temperature on sperm cryopreservation." *Fertility and Sterility*, Volume 70, Issue 6, Pages 1162-1164.)

[29] Sancho, S, I Casas, H Ekwall, F Saravia, H Rodriguez-Martinez, J E Rodriguez-Gil, E Flores, E Pinart, M Briz, N Garcia-Gil, J Bassols, A Pruneda, E Bussalleu, M Yeste and S Bonet. 2007. "Cryopreservation on semen quality and the expression of sperm membrane hexose transporters in the spermatozoa of Iberian pigs." *Reproduction*. (2007)134: 111-121.

J. Bailey, A. Morrier, and N. Cormier. 2003. "Semen cryopreservation: Successes and persistent problems in farm species." *Canadian Journal of Animal Science*. 393-401.

In the mean time, success in long term cryopreservation of whole organs has been elusive, though some advances have been made for organs – mainly with rabbit kidneys[30]. Protecting a *whole* human body, and the person occupying it, from freezing damage is extremely complicated. As serious cryonics researchers admit, there are problems with cryoprotective agents and preservation processes in cryonics, mainly to do with toxicity, permeation and chilling injury. Cryoprotective agents like glycerol and ethylene glycol, used to eliminate ice crystal formation, are known to be toxic, causing some damage to blood cells, cell membranes, DNA and proteins. The extent of the damage is unknown, but researchers at Cryonics Institute and 21st Century Medicine, which is linked to Alcor, have patented their own cryoprotective agents, claiming lower toxicity and improved "vitrification". (Solutions that vitrify do not form crystals, but transition quickly into a glass-like solid state.) It is assumed and hoped by now that whatever damage is done by the cryoprotective solution is much less than the damage done by ice crystals or older and more toxic cryoprotectants.

The second preservation problem has to do with permeation. To decrease ice crystal formation, as much water as possible must be flushed out and replaced by a cryoprotectant solution. Complex organs are difficult to perfuse thoroughly and the brain, in particular, has a protective barrier (the blood brain barrier) which makes permeation difficult, especially with viscous solutions. The pressure of pumping the cryoprotectant solution through can cause what is called osmotic shock, in which water is suddenly and rapidly evacuated from the cell through osmosis, causing dehydration and even cell apoptosis leading to generalized injury to the tissue.

[30] Fahy, Gregory M., Brian Wowk, Jun Wu, John Phan, Chris Rasch, Alice Chang, and Eric Zendejas. 2004. "Cryopreservation of organs by vitrifcation: perspectives and recent advances." *Cryobiology*. 48:157–178.

These current technical problems are rendered more serious because, in addition to good science, an ideal *social* setting is needed for carrying out cryopreservation. Often this is impossible given the social realities of non-immortalist life-death regimes. My survey of Alcor and CI public case reports from the last two years shows that well over 50% of suspended patients received less than ideal preservations, some being only straight frozen and sometimes after long delays – at CI several cases were accepted post-mortem and by CI policy were kept on dry ice while all the paperwork and funding was processed. Professionalization would help this latter problem whilst rigorous and legitimate medical research would help reveal details of the complex biological problems with cryopreservation. However, cryonics has not had much success with either professionalization or rigorous medical research (see Chapter 5 for more detail).

What about science-based claims for future reanimation? The second, and ultimate, desired outcome is reanimation. Unlike preservation this is a *science always deferred*. It is perpetually postponed. Its plausibility is dependent on what may be inferred very generally from present conditions and abilities about the potential of future science. Given what we know about the world, and the kinds of tools we have developed thus far to manipulate the world, what is it reasonable to assume about the capabilities of future science? How much cellular damage can future science reconstruct? Can future science reanimate and then rejuvenate or will the reanimated person quickly fall to another age-related disease? Can future science reconstruct a biologically-preserved person in a non-biological form?

Obviously reanimation is a much more speculative aspect of the cryonics equation. But the main concept behind reanimation is important to all immortalist projects. Namely, the concept of a *healthy* extended life. The idea behind cryonics is not simply to thaw a

cryogenically suspended person back to momentary life so that they may die again of the same disease or cause that killed them in the first place. The goal of Immortalism is to extend healthy life. In the case of cryonics this means reanimating a person and restoring them to good health so that they might remain active as a person. Proper reanimation, then, would require not only the proper techniques of thawing a person back to warm life, but curing them of the ailment that caused their death in the first place and then providing them better over all health so that their life might be properly extended.

In other words, reanimation requires not just the development of a particular technique (of reanimation) but an overall revolution in medicine towards the achievement of rejuvenation therapies, body repair, and defeat of the major diseases causing death. To make a decent case for reanimation, and do the best preparations for it during the process of preservation, Cryonicists have to continue pulling out the tarot cards of science, or as CI director Ben Best mildly puts it, "second-guessing the capabilities of future science"[31]. It is here in this future space that the three immortalist strategies – cryonics, biogerontology, and artificial intelligence - meet.

Current Immortalism and Its Context

Through the 1970s, cryonics slowed down. From its early excitement and optimism, the promise of cryonics faded until the late eighties and early nineties, when the tech tide lifted all futuristic boats. In those interim years, cryonics seemed stuck in place, without making any high visibility technological strides. But at least the organizations became increasingly stable and savvy, slowly creating more complete protocols for cryopreservation as well as better social

31 Best, Ben. 2009. "Viability, Cryoprotectant Toxicity and Chilling Injury." *Cryonics.* http://www.benbest.com/cryonics/viable.html (last accessed Dec 12, 2009)

protocols for contact with external institutions and networks. Cryonics leaders like the Chamberlains, Jerry Leaf and Mike Darwin at Alcor, many of whom had studied biology, were undertaking research on better protocols and vitrification procedures. But cryonicists also realized that personal survival was tied to social survival. To operate smoothly and legally, they would be forced to interface with a number of institutions and so they had better figure out which kinds in general and which ones specifically would be willing to interface with them. Over the years, cryonics organizations set up connections with funeral homes, hospices, physicians, lobbyists, insurance agents. They began to see their position in relation to these institutions and, where it served them, they used existing norms and laws against their grain: life insurance to pay for cryopreservation, religious objection to autopsy to avoid dissection, use of the anatomical gift act[32], long term trusts and so on, most of which will be investigated in detail in the next chapter.

Cryonics was the earliest manifestation of Immortalism, and whilst many other groups and individuals would converge around its already established networks, ideas and personalities, it was really the development of three other socio-cultural currents that gave today's immortalist movement its breadth and momentum. The first of these currents was the development and convergence of futurist groups inspired by new sciences and technologies, starting in the late 1970s and 1980s and flowering in the 1990s, mainly on the West Coast; the second, the technology boom that led to the gigantic growth of information technologies and of Silicon Valley in the 1990s, followed immediately by the biotech boom that came on the heels of the human genome project and the maddening array of seemingly impossible biotech products issued

[32] Some of these practices were instituted quite early on. The use of life insurance was attempted in 1968. See http://www.alcor.org/cryonics/cryonics8107.txt**.** And it seems that Nelson was already using the UAGA in the early 1980s. (see Bly, Kenneth. 2005. "And now for the rest of the story". *The Immortalist (later Long Life).* November 2005. Accessed July 28 from http://www.cryonics.org/immortalist/.)

and promised by biotech ventures. Together, these would lead to the third current, the development of two other Immortalist strategies, biogerontology and Artificial Intelligence.

At the start, cryonics was a futuristic idea without a theory for that future. What would it take to revive a "dead" person? A person already aged and ravaged and frozen? How would you even start thinking about restoring biological and mental health? Regarding the body as a series of parts, being familiar with information theory, physics as well as biology, Ettinger had intimated the idea of body repair technologies but without being able to propose what that might actually entail.

The future gained its strongest theoretical foothold through the work of an MIT graduate by the name of Eric Drexler. Today, Drexler is considered the father of nanotechnology although his own proper vision of nanotechnology has been sidelined. Mainstream nanotechnology is understood to encompass any technique that deals with matter on a very small scale, on the scale of a nanometer (one billionth of a meter). But Drexler's vision was more all-encompassing and not just a matter of scale. Introduced in a 1959 lecture by Richard Feynman, titled, "There is Plenty of Room at the Bottom", in which the famed physicist had argued that much more can be done at the small scale of atoms and molecules, Drexler spent the late 1970s imagining the possibility of designer molecules, especially biological ones such as protein molecules. If white blood cells can travel around the body independently but with a clear goal of countering foreign materials and repairing the potential damage done by infectious diseases, why shouldn't designed biomolecules potentially move around and repair whatever needs repair? That was the essence of Drexler's vision: designed molecular robots, or assemblers, carrying out specific goals by moving around the body, or around any matter actually, and assembling other atoms or molecules in optimal arrangements. With that single idea, it suddenly seemed like anything could

be done, anything could be manipulated and manufactured more or less out of anything else. It was just a question of shifting the atoms around into the desired layout, an intervention into the heart of matter itself, whereby alchemy would yield to engineering the promise of transmutation, turning any material structure into any other, over wide limits. That at least was the vision flashing before Drexler's eyes.

In 1981, Drexler published his first paper outlining the possibility of creating "molecular machinery" that would "open a path to the fabrication of devices" according to "atomic specifications"[33]. Five years later, in 1986, he published *Engines of Creation*, and with his then-wife Christine Peterson founded the Foresight Institute, which today carries on the work of promoting and educating the public on nanotechnological issues without its main founding member. The Institute's forums and meetings are also, as they were then, a place for like-minded futurists to simply gather and feel at home in the exchange of ideas that would seem outlandish in other settings.

It is difficult to overestimate the impact of *Engines of Creation* and the subsequent birth of nanotechnology. We see and hear 'nanotechnology' all around us: Summits at the Department of Energy, congressional funding, NSF conferences, corporate research, cutting-edge products... But most of the nanotechnology we witness would be and often is disavowed by Drexler himself for the simple reason that nanotechnologists today are concerned with marketing stronger, smaller materials and have almost completely renounced the idea of molecular assemblers[34]. Immortalists, for their part, are generally avid (though not entirely uncritical) fans of Drexler's

[33] Drexler, Eric. 1981. "Molecular engineering: An approach to the development of general capabilities for molecular manipulation". Proceedings of the National Academy of Sciences. 78(9): 5275-5278.
[34] This has a bitter and contentious history, well-summarised by the writer Ed Regis in Wired. Regis, Ed. 2004. "The Incredible Shrinking Man". *Wired*. Issue 12(10).

version of nanotechnology. And with good reason. Drexler's nanotechnological vision scooped cryonics out of a theoretical void and gave it a molecular engine to hook future revival on. Recall that there were two main problems with cryonics revival: how do you repair freezing damage to the cells? and how do you ensure that brain cells would not only function but also maintain memory and other functions crucial to personal identity? Molecular repair, it was thought, could potentially, theoretically solve these problems, the former with greater ease than the latter. Drexler included a chapter on cryonics in *Engines of Creation* in which he outlined the possibilities of repair. The implications were taken up and advanced by computer scientist Ralph Merkle, whose ideas changed cryonics and introduced a new criterion, the "information-theoretic definition of death", by which it was held that if sufficient information about the atomic arrangement of the brain is preserved – on any substrate, carbon or silicon, in the brain itself or a computer chip – then the person cannot be called *irreversibly* dead. The hope of future re-animation in cryonics, as well as utopian projections of enhanced capacities and abundance are still fuelled by the Drexlerian vision of transmutation, not the market-driven vision of profitability.

At the same time, the technical and theoretical contribution shouldn't overshadow the role of social galvanization. Nanotechnology formally and theoretically wedded cryonics to a network of engineers and computer scientists who, recognizing some common interests, began to align themselves into groups and networks that would become crucial to the development of Immortalism, futurism, AI and eventually the NBIC convergence. Indeed, Drexler had been introduced to cryonics through the early sproutings of such a network. Before conjuring up nanotechnology, Drexler had entered MIT as a space enthusiast. A space enthusiast of a particular sort: one vying for space colonization. On the heels of the space program, the idea of

space colonization had become imaginable and a group of west coast enthusiasts led by the Arizona-based couple Cynthia and Keith Henson became its vocal enthusiasts and organizers. In 1975, they formed a group called L-5 to explore and advocate for space settlements. This was the 1970s. The oil crisis and the dire warnings of the Club of Rome had initiated a worry over the finitude of earth's resources and survival on earth – both of concern mainly for the highly developed and mediatized industrial world, people who felt there were important things to protect. At the same time, in 1975 the US Apollo and Soviet Soyuz spacecrafts connected in space heralding not just the prospect of superpower cooperation outside of the earth's atmosphere, but also performing the possibility of human sociality in space, a performance prefigured and perhaps predetermined by sci-fi and especially Start Trek. Three years later, *Star Wars* was released and Battlestar Galactica aired on TV.

L-5 gained its power from this mutually reinforcing context: space was crucial to future survival, so the future would have to be geared towards space. The enthusiasts who gathered around L-5 saw space both as a heady adventure where the greatest promises of science would unfold, and as a solution for the troubles of earthly finitude. With its thematic mixture of science fiction, science, engineering and exploration, as well its social mixture of amateur enthusiasm (an aspect of American sociality that would be later termed D.I.Y.) and institutional link-ups, the group soon became a locus of activity and exchange for all futuristically-minded people. Early members included Timothy Leary, Isaac Asimov, Marvin Minsky, and Freeman Dyson. They also included the computer scientists and writer Hans Moravec, cryonicist Saul Kent, the future sociologist, cryonicist and NSF director William Sims Bainbridge as well as Eric Drexler; at its peak it was said to have sixteen thousand members (Regis 1990; Bainbridge 2007b:37).

As the space program lagged, L-5 lost its momentum but for futurists and immortalists it set the tone of things to come. It was where space, immortality and molecular technologies came together to produce a particular orientation towards the future that still informs the movements today: survival, long life, technological utopia. It also served as an incubator for ideas and social relations. Into Keith Henson's vision of space colonization, Moravec and Minsky threw mind uploading, Drexler sprinkled some nanotechnology, while Saul Kent brought in cryonics. Keith Henson, Eric Drexler and Marvin Minsky would become active and avid cryonicists. And mind uploading would lead to the idea of cybernetic immortality. As the final chapter will show, it is precisely this fusion of ideas and people that provided the impetus behind the NSF's "NBIC convergence" projects.

The new futurist blend promised an unprecedented potential for transcending the physical limits of human existence. It was this idea of transcendence in the physical rather than the spiritual sense that in this same period engendered the term Transhumanism and the movement associated with it. Its main purveyor was an Iranian-born author, Fereidoun Esfandiary, better known by his adopted name of FM-2030. A son of a diplomat, and a one-time officer at the United Nations Conciliation Commission for Palestine, FM-2030 quickly grew disillusioned with cold war politics, nationalism and even the contemporary framework of human rights. Through his novels as well as opinion pieces for *The Nation*, *The New York Times* and *The Village Voice*, he advocated for a world in which national identity would play a lesser role, older models of kinship would yield to mobile and flexible determinations of kin, and local humans would transform into global citizens. But it was his later writings and teachings, focused on the role of technology as the medium taking us to a utopian post-human future, that sealed his place in the futurist firmament. Starting with *Upwingers*, a book he published in 1973, he moved from

a global earthly politics to a cosmic politics: neither left wing, nor right wing, but up wing. Through the late 1970s and early 1980s he taught futurist-related courses first at the New School then at UCLA where he became another nucleus around which the futurist movement would cluster. His futuristic predictions and plans gained enough fame to get him invited for consultancies with large corporations as well as for a multitude of TV appearances. It was in the 1980s, on the west coast, through work with his coterie of Up-Wingers that the term "transhumanism" began to emerge. In 1985, he officially changed his name to FM-2030 and in 1989 he published what would become one of the first official texts of the transhumanist movement: *Are you a Transhuman?*, a manifesto at once challenging the status quo, and taking off with galloping optimism towards a utopian world of limitless energy, limitless food, limitless raw materials. It is worth noting that in the same year, the father of cryonics, Robert Ettinger, self-published a reprint of another seminal transhumanist text, *Man Into Superman* (originally published in 1972). It is difficult to qualify the optimism infusing these texts and vision as anything but American, as a technologically-enabled version of Thomas Paine's exhortation to Americans that '"we have it in our powers to begin the world anew" (Paine 1776). FM-2030's life was taken by cancer at the turn of the millennium, on July 8, 2000. He is currently awaiting the year of his name under cryopreservation at Alcor.

As a metaphor for jettisoning the past (judging from interviews, "to jettison" seemed to be a favorite verb for FM-2030), the "name change" became a common strategy, adopted as a performative act by a number of futurists, including FM-2030's early collaborator in transhumanist ventures, Natasha Vita-More, and a British philosopher who came to be known as Max More. Max T. O'Connor had taken up cryonics advocacy whilst still in Britain, but his activism flourished when he moved to the University of Southern California in 1988 to complete

a Ph.D. in philosophy. A year later, he changed his name to Max More, signifying both abundance and a dissatisfaction with what is given. Along with Tom Morrow, another man with a signifying name, More started a journal of ideas called *Extropy*, so named to provide a counter-concept to entropy, that is, to signify greater organization, life, energy and vitality. This latter – vitality, or life – formed the central core of Natasha Vita-More's assemblage of a name, whilst the last part of her name is a social artifact of her marriage to Max. Both have continued to be avid cryonicists; indeed, More recently assumed the position of president and CEO at Alcor, following a few stressful years of leadership crisis at the company.

Founded in 1992, More and Morrow's Extropy Institute became the new L-5 of futurism, with the advantage that it was not focused narrowly on space colonization, but widely concerned with enhancement technologies that, in the late 1980s and early 1990s, were beginning to hold up a new set of promises – control over biology, control over the brain, control over all matter in the universe, a set of promises that would become the pillars of the NBIC convergence. Some of the older names from L-5 also appeared on the roster of speakers at the Extropy Institute (such as the ubiquitous Marvin Minsky). But a host of new names signaled not only a wider social berth for the futurist movement, but also the arrival of the new sciences, specifically the biosciences and genetics, exemplified by figures like molecular biologist Cynthia Kenyon. Many current futurists and immortalists trace their roots and early sense of transhumanist excitement back to the Extropian meetings. Thus, the now-defunct Extropy Institute both created and rode the crest of a wave of techno-utopian optimism that, in 1998, would see the formation of the World Transhumanist Association, co-founded by another philosopher, Nick Bostrom. The WTA splintered off from Extropy Institute and eventually replaced it as the main transhumanist organization, leaving many Extropians still bitter over the separation.

That futurism would sprout on the West Coast seems to make sense, for more reasons than one, but especially given the context of the scientific and technological explosions of the late 1980s and 1990s. The 1990s were a defining decade for contemporary science and technology. The internet became ubiquitous, the tech boom (and bust) pushed hi-tech into private lives, creating a new financial sector as well as a significant class of science and tech workers; ditto for biotech as its projects and successes created new financial, cultural and scientific sectors, exemplified by the human genome project, begun in 1990, and more or less competed with great fanfare as the US President announced a "working draft" of the human genome in 2000.

In general terms, the tech boom followed by the biotech revolution normalized the optimistic view of of the 'boom' as a major shift in human history. The IMF's World Economic Outlook 2001 called the growth of information technology the IT *Revolution*, comparing its growth to that spurred by the industrial revolution, a comparison that became ubiquitous. On the social level, the tech boom expanded the field of people working for and interested in the technology and biotechnology sectors. Just as the tech bubble was bursting, the American Electronics Association report for 2002[35] summed up the comparative growth of the tech sector in the United States: "Since 1995, manufacturing jobs have increased by 46,000, while software and computer services jobs have increased by 1.2 million." The total number of people employed in the high tech industry had reached 5.6 million, with 440,000 new tech jobs added in 2000 alone. Biotechnology – to be distinguished from high tech medicine by its focus on genetic, cellular and molecular manipulation – is a much more recent and much smaller sector, but was

[35] AEA Press Release for Cyberstates 2002, "Growth of Tech Employment Declines Sharply in 2001, AeA Report Says",,"," Washington, DC, June 26, 2002. http://www.aeanet.org/PressRoom/idmk_cs2002_US.asp (last accessed Sep 15, 2009)

already rapidly growing by the end of the 1990s, its growth marked by its ability to create products and attract capital more than its ability to create large labor pools. According to a Brooking Institute Report (Cortright and Mayer 2002), whilst most biotech firms were small, employing under 100 people, between 1995 and 2001 they attracted over 1,100 venture capital investments in the biotech sector for a total of over $10 billion. Altogether, in the 1990s, the pool of people who would be more open to tech-based ideas and solutions grew enormously, especially on the West Coast thanks to the concentration of companies in the Bay Area's Silicon Valley. The futurist groups were largely populated through this pool of self-defined "geeks".

There was a conceptual and psychological side to the growth of the futuristic movement as well. The "biotechnology revolution", with all its uncanny triumphs, its mapping of the human genome in 2000, successes in the manipulation and transfer of DNA, finding molecular solutions to medical problems and the production of previously unimaginable entities (a few examples: transgenic animals such as cows that produce insulin in their milk; the Dupont copyrighted Oncomouse; Dolly the cloned sheep; the identification of the genetic basis of some diseases, such as Huntington's and hemophilia; the production of a cure to hemophilia, the protein factor VII, from hamster cells grown in the lab), increased the credibility of the kinds of ideas and hypotheses in the domain of biology that previously had been deemed outlandish. Anecdotally, during the period of my research, as genetic engineering and biotechnology gained visibility due to controversies such as cloning and stem cell therapies, I noticed a shift in people's attitudes towards my explanations of ant-aging research and cryonics: from dismissal and distaste, to simply distaste. In 2004, many lay people I spoke to would simply say that none of it made sense and that it was impossible or crazy. By 2008, exposed to the "miracles" and hype of biotech, even if through its controversies, they would shrug and say something like, "that could be

possible" or "they can do anything". Equally, in public debates, scientists and ethicists went from ridiculing the claims outright to saying that they were *feasible* if not desirable. So despite the *ethical* gaps in people's views of biotechnology and its products, the *credibility* gap has closed significantly over the last several years. In fact, quite likely, the opening of the ethical gap is proportional to the closing of the credibility gap, as unfamiliar entities and possibilities became more and more *imaginable*. If the intervention of the biosciences into life's matter created public debates over cloning, tissue harvesting and growing, reproductive technologies and a variety of enhancements, and expanded the purview of bioethicists in the political arena, it also suddenly thrust the marginalized techno-futurist organizations into the limelight, since they had been thinking and talking about such matters for years.

Biogerontology or Strategies for Engineered Negligible Senescence

The rise of the Immortalism, but especially biogerontology, can be placed in the wider envelope of longevity and anti-aging research that surged in the 1990s in part in response to the concerns of the graying Boomer generation. Though the actors in the broader field of anti-aging do not like to be associated, the various strains of mainstream anti-aging research and the more radical approaches of the budding immortalist strains were part of the same current that began to see aging as a disease and biotechnology as a cure. The difference is anti-aging physicians do not aim for immortality and immortalists don't much care for human growth hormone. But both, and indeed the whole wider field of anti-aging, came to share the view that aging is not a condition but a disease.

Work on forestalling aging dates back to the 1930s and early research on Calorie Restricition. But it was the new genetic sciences that gave anti-aging research a theoretical and

strong practical basis – with Michael Rose first proposing an evolutionary theory for the occurrence of aging, in 1986, thus taking it out of the realm of the inevitable. Another biologist, Michael West, swept aside a psychological and practical barrier put in place by Hayflick's limits of cell duplication and the telomere ("tail" or endcap of a chromosome); rather than taking the Hayflick limit as a natural and inevitable law for the aging process, West actually used research on telomeres to attack aging. In 1990, he formed Geron, one of the earliest companies funded by big venture capital, to do anti-aging research with telomeres and stem cells. Similarly, Cynthia Kenyon who had doubled the life span of nematode worms in 1993 by altering a single gene, turned to venture capital to start her own company, Elixir Pharmaceuticals (Hall 2003). Michael West is now CEO of a company called BioTime, which started out as a cryonics company. Though the money continues to flow and all these scientists are considered important award-winners no major anti-aging triumphs have emerged from their efforts.

More controversial is another strand of anti-aging research. Also in 1986, the pharmaceutical company Eli Lilly synthesized human growth hormone (hGH). Four years later, an Eli-Lilly-funded study published in the reputable *New England Journal of Medicine* stated that six months of hGH therapy had the effect of slowing certain aspects of aging by 10 to 20 years (Mykytyn 2010). That hGH was later linked to cancer, has not tempered the growth of the anti-aging medicine it gave birth to. Along with some celebrated companies that attacked aging on a genetic level, including those formed by Rose and Kenyon, a host of new companies placed their anti-aging bets on the potential of hGH. The American Academy of Anti-Aging Medicine (A4M) hosted its first conference on the science of anti-aging in 1994 and established a "credentialing board" for physicians in 1997 (Mykytyn 2010). Today, the A4M lists over 700

anti-aging physicians and estimates of the anti-aging marketplace are up close to US $20 billion (Mykytyn 2004).

The early claims and financial success of the A4M made it the first and most visible front in the war against aging. It also made it the first target, with physicians, gerontologists and other scientists regarding it as a profit-seeking snake-oil venture. The demographer and aging expert S. Jay Olshansky was the most famous critic, spearheading an attack against A4M by publishing a statement signed by a number of scientists and physicians in *Scientific American,* stating that no current interventions have been found to affect aging. Olshansky was not in principle against the possibility of finding such interventions, and indeed, has since become a forceful advocate of attacking the underlying processes of aging in order to be able to add, say, 7 or 8 years to the lifespan. His attack on A4M was based on the view that hGH, on which the whole industry had been erected, did nothing in this regard.

But other scientists and physicians did have problems with anti-aging efforts in principle. In 2003, Sherwin Nuland, a highly visible physician and well-respected professor of clinical surgery at Yale, with a number of NY Times best-sellers under his scrubs, including *How We Die* (1995), published an essay in Acumen Journal called "How to Grow Old" (later published as chapters 7 and 8 in Nuland 2007). Aging and death, he wrote, are "the condition[s] upon which we have been given life. The aging and eventual death of each of us is as important to the ecosystem of our planet as the changing of the seasons. When William Haseltine, Ph.D., the brilliant biotechnology entrepreneur who is the CEO of Human Genome Sciences, says, 'I believe our generation is the first to be able to map a possible route to individual immortality,' we should cringe with distaste and even fear, not only at the hubris of such a statement but also at the danger it poses to the very concept of what it means to be human."

Less than two years later, the widely read and highly regarded MIT Tech Review asked Nuland to write an essay assessing the claims of a certain Dr Aubrey de Grey. In the next two to three years, de Grey would start to appear on 60 Minutes as well as at the NY Academy of Sciences, on Barbara Walters as well as at the Gerontological Society of America. But at the time Nuland wrote his piece, de Grey was relatively unknown outside a limited circle of researchers and ardent Immortalists, who themselves were only then beginning to hear about his ideas. He was based in Cambridge, UK, and not getting out much. He was just starting to build his program and setting up his foundation. His claim was that with an engineering approach to biomedicine, we could defeat aging and death; his program has become more detailed since, but he already had outlined the theoretical approach: aging is an effect of cumulative damage due to a number of *different* processes; damage can be repaired if properly identified and disaggregated; therefore, one must identify the key sites of damage in the process called aging and conduct research to find solutions for them. He suggested that we need not have a theory of aging or a full understanding of an overall metabolic approach; we just need to find the damage and deal with it. A mechanic does not need to be able to build or even know the physics of combustion engines to repair a car. He called this approach SENS – Strategies for Engineered Negligible Senescence. He identified several sites of damage, each of which eventually became a funded and researched program under the umbrella of his organization, SENS.

Nuland's Tech Review article did not engage any of the substantive or theoretical ideas forwarded by de Grey. Instead, he ridiculed de Grey for being a rogue scientist and likened his long red beard to Rip Van Winkle's. He ended his essay, without building much of an argument, by suggesting that it is this sort of blind science that will spell the end for humanity, concluding with the following quip on de Grey's proposal to defeat death through biomedicine and

engineering: “With the passion of a single-minded zealot crusading against time, he has issued the ultimate challenge, I believe, to our entire concept of the meaning of humanness.”

The piece was accompanied by an editorial written by Jason Potin, an editor at the journal. Potin took a similar position but was even more scathing in his characterization of de Grey, calling the whole idea “science fiction”. Potin had recently joined the MIT Tech Review from another science journal. Its name was Acumen Journal, which under Potin’s watch had published Nuland’s first essay on aging and death.

The Immortality Institute’s forums immediately linked to the articles, asking members to write to the Tech Review; news also spread to other listservs. Enraged letters flooded in from immortalists as well as other readers who had noticed that no substantive point had been made. The article became the magazine’s most popular piece ever (Bartlett 2005) but, apparently, Potin was surprised by the reaction and felt somewhat remiss. After discussions with de Grey, he decided to ask scientists to review the substance of de Grey’s claims. Several scientists accepted, then declined, so Potin took it upon himself to offer $10,000 to any scientist who could *prove* to an independent panel of scientists that de Grey’s claims had *no scientific merit*, that is, that they were scientifically implausible. De Grey’s foundation sweetened the pot with another $10,000. To date, no one has come forth with any accepted, definitive counter-claims. From that point on, de Grey’s reputation began to change and this has become a sort of myth of origins for de Grey and the SENS strategy. Since then de Grey’s star has risen progressively in the firmament. Building on this coup, he took a two-pronged approach. He has managed to gather high profile immortalists such as Ray Kurzweil around his project, explicitly telling me that while he is not concerned with artificial intelligence as such, he does want to appeal to the shared interest in immortality in the AI and Singularity communities. At the same time, he has tried to make

inroads into more mainstream academic scientific settings, by setting up research programs within university labs and making appearances at conferences and academic centers. His invitation to speak at the illustrious New York Academy of Sciences in 2009 demonstrated how far he had come.

The strategic model of SENS claims that if we treat the specific problems attacking the aging body – or if we maintain the functionality of the bits – and therefore slowly forestall its debilitating effects in bits and pieces, we can push back the various causes of death little by little. By extending life another ten years in this way – in the way, as Aubrey de Grey analogises, that we would forestall the death of a car by maintenance – we would give technology another ten years to develop the next required pushback and so on. At some point we would reach what he has called "Escape Velocity": the technology would push back the effects of aging so far that in effect many of the younger cohort would end up with extremely long life spans on the order of 5000 years. This might not be of great help to those older members of society whose engines have already gone to rust in large part, but for those who were only in their teens it held great promise. Indeed, from 2003 onwards, de Grey regularly claimed that the first 1000 year old was alive today somewhere, perhaps sitting in this very room. People today, he was saying, have only to live well to become immortal.

It was an important claim in many ways. Of course, there was hype around it and much exaggeration. But the hype provided motivation at the time. Most of the SENS researchers I spoke to didn't buy into the timeframe literally; but they said this sort of talk was necessary to galvanize the public, obtain funds and also *motivate themselves* because the basic model seemed, nevertheless, correct to them. Since then, I have spoken to at least one researcher who five years after being spurred into action by de Grey's words has come to doubt the feasibility of his model

or the idea that a generation of immortals is sitting amongst us today. He nevertheless continues to identify and work as an immortalist on his own life extension project.

Even under the name "life extension research", longevity research, or even biogerontology, this sort of research is still not outwardly encouraged or heavily funded. It is thought to be far-fetched perhaps, but it is no longer a taboo science as such, at least not in the way that de Grey has managed to frame it.

Artificial Intelligence, Authentic Immortality

The story of cybernetics and Artificial Intelligence has been told many times over (for two versions relevant to this project see Dupuy 2009 and Gleick 2011) though its link to Immortalism has been less frequently explored (exceptions include Geraci 2010). I will not re-invent that history here (though some historical aspects will appear in the final chapter) except to emphasise that the idea of mind as a replicable, material system was already imagined in the earliest days of cybernetics though initially its mechanical and replicable aspects were not considered in structural terms, but in communicative terms, in terms of information or messages being transmitted. Later, computer engineers such as Hans Moravec combined the structural and the informatic to develop the concept of "downloading" or "mind uploading", which clearly implied the survival of the mind on other non-biological platforms and the potential continuation and expansion of a mind.

But here too it was the infotech and biotech booms that reinvigorated the mind uploading scenarios and generated a social movement centered on its promises. This part of the story must be understood in the context of information technologies, dry lab work and computational models not just of mind, but also of biology. Through the 1990s and early 2000s, genetics was

becoming an increasingly computational matter and scientists were prescribing molecular cures and doing biology by code rather than by pipette. At the same time, the development of cognitive science and neuroscience into the great sciences of the late 20th century led to various attempts at brain mapping. The Human Brain Project was established just as the IBM computer Deep Blue got switched on in 1997 to beat the chess master Gary Kasparov, giving a big boost to flagging AI enthusiasm. By the first years of the new millennium, these sciences were converging in what was acronymically called NBIC: Nano, Bio, Info, Cogno. The NBIC convergence really stood on the ground of information sciences and again brought together a number of futurists together in the fold of legitimate science. It was that strange thing called information, neither material nor quite immaterial, that was enabling it all. Everything is information, after all, so it seemed like computation and digitization could truly represent and manipulate the whole world, from the cell to the mind. That was and continues to be the main promise driving the future and the futurists some of whom are now associated with what is known as The Singularity.

The Singularity movement gained popularity through its association with the famous inventor Ray Kurzweil, its unofficial leader and spokesman, its predictor-in-chief, its Chief Executive Oracle. He assumed this mantle with the publication of *The Singularity is Near* (2005), a book that analyses the curve of technological development from humble flint-knapping to the zippy microchip. The curve he draws rises exponentially, not linearly, and we are sitting right on the elbow, which means very suddenly and very quickly this trend towards faster, smaller, more powerful and smarter technologies will yield greater-than-human machine intelligence. That sort of super-intelligence will proliferate not only by self-replication, but by building agents with even greater intelligence than itself, which will in turn build even more intelligent ones, resulting in an "intelligence explosion" so vast and so fast that the laws and

certainties with which we are familiar will no longer apply. That event-horizon is called the Singularity – a term borrowed from physics and mathematics.

However, since our brains are wet, messy, relatively inefficient products of evolution and, as one Singularitarian put it, were "not designed to be end-user modifiable", we biological humans may or may not become part of this intelligence expansion, through something like uploading. But if we don't survive at all, well, at least thanks to us the universe itself will have been saturated with something of independent value, all its "dumb matter" transformed into "exquisitely *sublime* forms of intelligence". That is the basic vision of the Singularity, to be explored in greater detail in the final chapter.

Historically, however, the Singularity did not originate with Kurzweil. In 1993, a computer scientist, mathematician and science fiction writer named Vernor Vinge delivered a lecture at a NASA-sponsored symposium that laid out a serious scenario in a half-troubled, half-exuberant tone. "Within thirty years, we will have the technological means to create superhuman intelligence," he declared. "Shortly after, the human era will be ended." Borrowing a term from mathematics and physics that describes a point past which known laws do not hold, Vinge called his threshold the Singularity.

Dropped like a futurist gauntlet, the Singularity meme was picked up by Eliezer Yudkowski, a young artificial intelligence researcher who, along with programmer Tyler Emerson, set up the Singularity Institute For Artificial Intelligence in 2000. A bearded, convivial prodigy who speaks in highly formal sentences and is proud to not have a PhD, "Eli," as he's known, was excited by the prospect of superintelligent and superpowerful artificial agents, but the humanist in him worried that such an agent might end up, willfully or accidentally, destroying all the things we care about—like human lives.

For a crude illustration of an accidental case of destruction, picture a superintelligence optimized to produce paperclips. It would have the ability to rearrange the atomic structure of all matter in its vicinity—including, quite possibly, you—to obtain a lot of high quality paperclips. It may not despise you in particular, but your atomic arrangement is simply not to its liking. Unless you have an office-supply fetish, you'd consider that *Unfriendly AI*. Yudkowski, taking both the prospect and his fears seriously, urged research toward the development of *Friendly AI*. His worrier ethos, or at least its rhetoric, has been passed down: whenever someone throws up an alarming new Singularity scenario, a Singularity fellow, shouldering a burden the world refuses to even acknowledge, will say something like, "Oh, now I'm really beginning to worry."

Early on, the Singularity Institute was essentially an email list called SL4, or Shock Level 4, with a small subscription base of futurists from groups such as Transhumanists and Extropians, and a few researchers tracking the holy grail of Artificial General Intelligence (AGI). The early discussions sound exploratory now, but they already contained the quasi-schizophrenic *sublime* element that characterizes Singularity conversations today: on one hand, worry; on the other, excited anticipation for the "most critical event in human history." We will be apes watching the rise of superior beings with awe—beings we ourselves will have created. Shoulder to shoulder with this wonder – a sort of transcendental naturalism - stands the parochial concern with protecting human lives and gearing superintelligence toward solving human problems.

The subject of occasional discussion on the SL4 list, Kurzweil was well-known back then, already consulting with the government and appearing on TV shows. His previous book *The Age of Spiritual Machines* (1999) laid out the first exponential curves of an accelerating technology trend, presenting a utopian future of unlimited energy and great sex enabled by conscious machines. But it did not mention the Singularity.

It was only after the turn of the millennium—when else?—that the Singularity increasingly moved to the centre of Kurzweil's platform. He started out by debating Vinge and then spoke about the Singularity in symposia at two futurist institutes, Foresight and Extropy, where Yudkowski politely lambasted him from the audience. Yudkowski asked Kurzweil whether the Singularity was good or bad, and what people could do about it. Kurzweil had no answer. On his SL4 list, Yudkowski would later write, "What Kurzweil is selling, under the brand name of the 'Singularity',,' is the idea that technological progress will continue to go on exactly as it has done over the last century." Kurzweil's "pseudo-Singularity" depended on the inevitability of his predictions and was leading to nothing more than "luxuries" such as superintelligent servants. Yudkowski's true Singularity, by contrast, was potentially alarming and demanded intervention. It could lead to a land of post-human bliss, but only if handled properly. It would need a vanguard of rationalists and scientists to attend to it. In short, Yudkowski was calling for a movement.

His beef with Kurzweil was about engaged activism versus passive predictivism, but it was also a bid for attention. He upped it by issuing a paper about safe AI timed to coincide with the release of the film adaptation of Isaac Asimov's *I, Robot*. Kurzweil, who was about to release his book on the Singularity, joined the Institute as advisor and then board member. It benefited both. Kurzweil couldn't have assumed a mantle of authority without a strong link to the activists at the Institute, while the Institute needed his clout and his connections. The non-profit Institute soon found itself on firm financial ground, thanks in part to Kurzweil's friend and libertarian financial guru Peter Thiel, who made his money by co-founding PayPal and investing early in Facebook. Thiel also co-authored a nativist book called *The Diversity Myth*, reportedly donated $1 million to the anti-immigrant group NumbersUSA, and funded James O'Keefe, the not so

independent guerilla videomaker responsible for undermining Planned Parenthood and ACORN [36].

There are no numbers because there is no umbrella organization. Participation in on-line forums and attendance at summits have been growing. Today the Singularity Institute is based in Silicon Valley, the Singularity University is campused at NASA, and an annual Singularity Summit, with nine hundred-plus in attendance last year, takes place around the country. The 2005 Singularity Summit had an attendance of 300 vs almost 900 in 2009. Kurzweil's book has sold hundreds of thousands of copies. There are Singularity activists, Singularity blogs, Singularity t-shirts, and even Singularity bashers, all of which confirms the status of the Singularity as a social movement, though Singularitarians themselves sometimes call it a revolution. "The problem with choosing or not choosing to be a part of our 'revolution'," Michael Anissimov, an organizer of the Singularity Summit, wrote on his blog, "is that, for better or for worse, there probably is no choice. When superintelligence is created, it will impact everyone on Earth, whether we like it or not."

It is not just the numbers. It is also social and financial capital. The majority of people involved are accomplished, very intelligent, scientifically oriented people. Kurzweil is advisor to DARPA and the US military; the Singularity Institute had a special summer university hosted by NASA last year; silicon valley is highly tuned into Life Extension and AGI advances; the Summit attracts speakers from Google to renowned philosophers such as David Chalmers, whilst audience members include researchers at Lockheed Martin, the gaming industry, silicon valley,

[36] Thrasher, Steven. "Conservative Facebook Investor Funded Anti-ACORN Videographer". *The Village Voice.* Sep 22, 2009. Last accessed on March 2011 from: http://blogs.villagevoice.com/runninscared/2009/09/acorn_videomake.php

the NSF, the biotechnology sector. It is crucial to note that Kurzweil and others involved in the movement are not cranks or idiots. Even though, as others have argued, they may have "messianic" tendencies in some sense, there nevertheless is good reason to take the Singularity seriously – not necessarily because you might believe in the potential event it describes, but because a lot of others do and many of those who do wield considerable financial and social power.

Who's an Immortalist?

What I have tried to describe is the interlinked development of several groups and networks that came together at a specific point in time around a common set of concerns and goals, amongst them radically extended human lives. The groups are linked together not only because their theoretical armature or ontological views on reality or their goals for the future match closely, but because they share a history: that is, they developed through a contingent confluence of actors, tools and ideas. Table 1 (at the end of this chapter) sorts these groups according to domains of activity, though it must be emphasized that there is overlap between groups. The groups are linked together also because the membership shares social backgrounds, being mostly white, male, and, in their own words, rationalist geeks. Social structure is an important background to the development of the movement and its attitudes and values. Access to education, technology and scientific knowledge is a pre-requisite for choosing scientific and technological solutions, especially those that are not yet routinized. And as I will describe in chapter 6, social structure also influences optimism, a common disposition amongst immortalists.

The following figures are meant to provide a sense of the membership profile of the various movements that in total or in part I have gathered under the umbrella of Immortalism. That is all they are meant to give, a sense. For the movements are new and rapidly changing and the figures for one group may not properly represent the membership of another.

In 2011, the two main cryonics organizations, Alcor and CI had approximately a thousand members each and a little over 100 patients in cryopreservation. Alcor receives over 150 requests a month for information packets, but adds an average of 5 members a month. Based on data from 2008[37], Alcor's membership was mostly male, with female members constituting only about 22% of the total. However, in an indication of a slight demographic shift, almost half of those women had signed up in the previous 5 years (vs. 40% of men). Average age for both men and women is 50; but average age at the time of sign-up (ie when they become members) is 41 for women and 43 for men. However, women who signed up in the previous five years tend to have signed up at a younger age with most being in their late 30s.

There is little data on other aspects of social identity amongst the scattered membership. Income and race data were not available, though the vast majority is clearly white. The World Transhumanist Association (WTA) periodically gathers data through on-line surveys, the latest one dating from 2007, with 760 respondents[38]; the numbers are indicative but it must be kept in mind that, unlike Cryonics, Transhumanism has much greater reach beyond the US and that not all Transhumanists are Immortalists. Indeed based on answers to a survey question that asked "Do you think it would be a good thing if people could live (in good health) for hundreds of years or longer?", it would be safe to say that 13% are NOT immortalists, as they responded to

[37] Based on raw membership data for 2008 provided by Alcor.
[38] Last accessed on June 10, 2011 from http://www.transhumanism.org/index.php/WTA/more/2007survey/

the question in the negative. The gender gap was much greater in the Transhumanist population with 89% male and only 10% female; and Transhumanists were by and large younger than cryonicists.

Politically, Transhumanists identify mostly as "technoprogressives" (16%) and Libertarians (10%) or Libertarian Socialists (7%), with 11% claiming to be non-political. The rest represent a wide range of political positions from anarcho-capitalist (2%) to European Liberal (5%) to Green (4%) to "Upwinger or advocate of future political system" (7%). With regards to religion, the 2007 WTA survey yielded the following data: 64% identify as atheist, secular humanist, agnostic or non-theist; 2% as pagan, 5% as spiritual, 1% as Raelian; the rest as a smattering (1-4%) of faiths from Buddhist to Mormon[39] to Protestant to pantheist. An internal poll (421 respondents) conducted in 2003 by the Immortality Institute[40], a broad on-line forum for proponents of radical life extension, showed similar results, with 58.5% identifying as agnostic, secular or atheist, 3.24% as pagan, 19.20% as Other, and the rest a smattering of faiths. Depending on how one interprets categories like pantheism, paganism, spiritualism or "Other", the non-theistic membership can be anywhere between 72 to 85 per cent.

Future Faith

Cloning of animals, experiments in stem cell research that replace dying cells and rejuvenate some tissue, the creation of organs and tissues in the lab through bioengineering, the

[39] Mormon Transhumanists happen to be a particularly active subgroup.
[40] 2003 Immortality Institute, On-line poll on religious/non-religious identity. Results forwarded through private communication.

genetic means of detecting and intervening in some diseases and extending healthy life in animals - these sorts of achievements are held up by Immortalists to indicate the limitless power of science over biology and the inevitable direction and progress of medical science towards the age-old goal of eliminating death and promoting life. That such developments and advances have been limited is not a counter-indication to their potential. What seems to be important is not what science has thus far achieved, but what it renders achievable in the imagination.

In the world of Immortalism there is still quite a distance between what may be assessed as a fact or a truth claim, and what is imagined as possible or posited as desirable based on a series of inferences from those facts. The evidence supporting the feasibility of their goals is indirect, and the case presented in favor of any of the strategies depends on some very big assumptions and projections into the distant future. Nevertheless, the intricate and vast imaginary of Immortalism – from current practices, including scientific research, to personal hopes, to future projections for humanity and the universe – has been erected on top of them. That gap between the facts and the imaginaries is filled by cultural work, including the social and cultural conditions that make certain practices and concepts possible, and the parameters that make certain outcomes desirable. This is the etic perspective the anthropologist can bring to bear on these science-based projects, to help us see how and to what extent hope and desire get entangled with fact and evidence, how much cultural preferences, scripts and permissions shape an agenda based on science, and how practice and concept form a range of commitments or dispositions.

I am not suggesting that facts are culturally-determined, nor am I suggesting that facts precede or trump culture. After all, I have made it clear that Immortalism is a particular, not universal, form of a common desire to live long – a desire renewed in a particular cultural form,

emerging at a particular time in a particular place, through very particular conditions that made it thinkable and possible in its actual current form.

So it's not a matter of separating out two realms – fact and culture – but to examine how the facts are emerging, being used, ignored, understood, interpreted, how factual and cultural parameters co-determine the contours of a particular project, how bits of evidence and fact, are bonded to each other to construct a case for or against a particular future goal.

We tend to use the authority of scientific techniques and facts to produce an effect in two different ways – first, to produce an effect on physical states (compound *x* has effect *y* on substance *z*), but, second, to produce an effect on mental states, that is, to authorise or discredit claims, positions, projects. Because it is so thickly cross-hatched with deeply historical categories and emotionally charged responses, and because its distance-from-evidence factor is so high, Immortalism has been embroiled in the game of authorization and dismissal from the outset. In recent years, as could be seen with the MIT Tech Review debacle and the institutional connections of the Singularity, it has chalked up a few points in the "win" column.

Whatever the prospect, immortalists simply say that there is a *chance* that cryonics will work, and when it comes to life and death, a chance however small is infinitely better than no chance at all. As one cryonicist put it: "Hey, there are three ways to go: you can be buried, burned or frozen. If you're frozen, you have a chance. Take your pick." That is the key idea everyone subscribes to. But depending on whom you talk to, the chances are cited as anywhere from less than one percent all the way up to 90% and everything in between (referring only to the medical or scientific possibility, and assuming good suspension with no major future geo-political disasters). This higher figure was cited in a speech by Ralph Merkle, a physicist and a nanotechnologist at the University of Georgia, at a conference organized by Alcor. The range of

probabilities given to the possibility of revival indicates the speculative nature of the enterprise. Those who veer towards the higher end, who see the chances of revival as being relatively high, tend to place more faith in more distant technologies such as nanotechnology and artificial intelligence. Biologists and other cryonicists who tend not to believe in the infinite powers of nanotechnology or AI, generally place the figure on the low end of the spectrum. The less concrete the technology, the greater the hope. Either way, the prospect of reanimation requires faith in the future of science as well as in the future itself.

Radical Life Extension and Immortalism: A Network Grid

	APPLIED RESEARCH	ADVOCACY / SOCIAL NETWORK	THEORETICAL/SOCIAL/ ETHICAL RESEARCH
General Longevity	Life Extension Foundation 21st Century Medicine Kronos Science	Immortality Institute Fight Aging MaximumLife	LifeStar SENS Timeship
Cryonics	Alcor Cryonics Institute Transtime Suspended Animation Critical Care Research	Society for Venturism American Cryonics Society Immortalist Society	
Bio-Geronotlogy	SENS Methuselah BioTime	SENS Methuselah	SENS
Trans-humanism	SENS Methuselah BioTime	World Transhumanist Ass. Extropy Institute Order of Cosmic Engineers	IEET Future of Humanity Inst. Better humans
Nano Technology	Nanofactory	Foresight Institute	Institute for Molecular Manufacturing Center for Responsible Nanotechnology
A.I. / Mind Uploading	Novamente Singularity Institute	Singularity Institute AGI Research Institute Brain Preservation Trust	Terasem Singularity Institute AGI Research Inst.

Table 1: Immortalism: A Network Grid

Chapter 2
The Trouble With Not Dying:
Secular Life-Death Regimes and the Problems of Indeterminacy

In February 1993, a six-year-old boy fell into a mountain river in the Austrian Alps. The reported air temperature at the time was -4 degrees Celsius. The temperature of the water he fell into was reported as 2.5 degrees above freezing. The boy weighed 22 kilograms, about the median weight for his age bracket in industrialized nations. The river took him away immediately. He drifted downstream for 6.5 kilometers, before rescuers got to him. One of the rescuers drowned, but the boy was eventually retrieved. By that time, he had been in the river for 65 minutes and he was flatlining, that is, he had no cardiac electrical activity and no blood flow through the heart, a condition medically known as asystole. His rectal temperature was 16.4 degrees Celsius, about 20 degrees below normal. In clinical terms, the boy was dead and had probably been dead for some time.

Rescuers provided basic life support until the boy arrived, by helicopter, at a hospital an hour and a half later. He was slowly rewarmed by cardiopulmonary bypass, until his body temperature rose and sinus rhythm returned. His neurologic status improved slowly. Five months later, the boy was back in kindergarden, alive and well[41].

The longest case of submersion was a 2 ½ year old girl, drowned for at least 66 minutes, as reported in the *Journal of the American Medical Association*[42]. There have been dozens of reported cases of patients recovering from various forms of "accidental hypothermia" – in rivers,

[41] Antretter H, Dapunt OE, Mueller LC. 1994. "Survival after prolonged hypothermia." *The New England Journal Of Medicine.* Jan 20; Vol. 330 (3), pp. 219.
[42] Robert G. Bolte, MD; Philip G. Black, MD; Robert S. Bowers, CCP; J. Kent Thorne, MD; Howard M. Corneli, MD. 1988. "The Use of Extracorporeal Rewarming in a Child Submerged for 66 Minutes." *JAMA.* 260(3):377-379.

under snow, on the cold frozen ground, from mountaineering accidents, suicides or alcohol-related accidents – *with* circulatory arrest[43]. That is, people who would be considered clinically dead – no heartbeat, no respiration, no signs of consciousness – but who have recovered thanks to a particular condition. That particular condition is the cold. Clinical experience and retrospective studies show that healthy people can survive circulatory arrest in conditions of deep hypothermia with no or minimal cerebral impairment[44]. Indeed, hypothermia is used in complex heart surgery to protect the brain from damage whilst the heart is repaired. In comparative studies of patients who have undergone aortic arch surgery, researchers have found that deep hypothermic circulatory arrest is a safe and useful technique for protection of the brain during surgery[45]. While in deep hypothermia with circulatory arrest, a person meets the basic criteria for clinical death and comes close to meeting the criteria for brain death. As one heart surgeon who had become interested in cryonics told me, "We take a person down to death, we just don't call it death."

There's a reason for the distinction. For death to be final, that is, for death to be death, it must be *irreversible*. If a person under cardiac arrest is resuscitated, we do not consider the person to have been dead. In the United States, there are specific physiological criteria for determining when a person may be called dead, but for the criteria to be effective they must be determined to be irreversible. Thus the Uniform Determination of Death Act (UDDA), codified

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[43] Farstada, M., K.S. Andersenb, M.-E. Kollera, K. Grongc, L. Segadalb, P. Husbya. 2001. "Rewarming from accidental hypothermia by extracorporeal circulation: A retrospective study." *European Journal of Cardiothoracic Surgery*. 20:58-64.
Walpoth, BH, Walpoth-Aslan BN, Mattle HP, Radanov BP, Schroth G, Schaeffler L, Fischer AP, von Segesser L, Althaus U. 1997. "Outcome of survivors of accidental deep hypothermia and circulatory arrest treated with extracorporeal blood warming." *The New England Journal Of Medicine* Nov 20; 337(21): 1500-5.

[44] Walpoth et al. 1997, *op. cit.*

[45] Kumral E, Yüksel M, Büket S, Yagdi T, Atay Y, Güzelant A. 2001. "Neurologic complications after deep hypothermic circulatory arrest: types, predictors, and timing." *Texas Heart Institute Journal* 28(2): 83-8.

in 1981 and eventually adopted by all states, enacts the following criteria for the determination of death:

> An individual who has sustained either (1) irreversible cessation of circulatory and respiratory functions, or (2) irreversible cessation of all functions of the entire brain, including the brain stem, is dead.[46]

The key word *irreversible* is not further defined by the UDDA, which can lead to ethical dilemmas in organ donation cases. In the case of organ transplant rules, some jurisdictions have specified a temporal measure to deal with the problem of irreversibility: an 8 to 10 minute *period* of circulatory arrest is required before death is accepted (Whetstine et al 2005). Leaving aside the ethical dilemmas, the question of irreversibility raises issues in medicine and biology that confuse, or perhaps expand, our notions of death. Before the ventilator, CPR and defibrillators began to systematically change the landscape of death determination, death was considered final when the heart stopped beating. These technologies have managed to either resuscitate people from cardiac arrest or artificially maintain circulatory functions in people who previously would have been considered clinically dead.

Up until 1969, no state in the U.S. had a statute defining death (Zaner 1988:2). When the ventilator and the possibility of anatomical gifts pushed the issue to the fore, states dealt with the matter piecemeal. There was a time when you could be dead in Kansas but not in New Hampshire. The federal government sought to create some uniformity in the matter by passing

[46] Uniform Determination of Death Act, accessed on June 10, 2011 from http://www.law.upenn.edu/bll/ulc/fnact99/1980s/udda80.htm

the UDDA in 1981. Even after its passage, however, ambiguities and controversies with the criteria persisted, particularly in instances that saw the introduction of technology into the life-death continuum.

As many have already noted, technological interventions have blurred the boundary between life and death (Kaufman & Morgan 2005) and confused traditional notions of personhood (Lizza 2006). Ironically, in efforts to determine "death" and "personhood" more precisely, science and technology have in fact placed both those concepts in crisis and created what has been called a "zone of ambiguity and tension" (Franklin and Lock 2003) around life and death. A clear and early example came with the introduction of the ventilator, life support and a new definition of death, as brain death. The ventilator – the key technology in this process – was initially developed to help with surgery and infectious diseases that prohibited breathing, such as polio, but as the equipment was introduced into more hospitals, moral obligation followed technical routinization (Koenig 1988) and its "heroic" use for general "life support" soon became automatic. It also became quickly incorporated into the procedures of organ transplantation, a procedure which fit the medical and cultural imperative to "save lives" (Timmermans 1999).

One consequence was to force a decision on a new definition of death – what came to be known as brain death. The story is well known by now: the use of the ventilator launched a set of ethical dilemmas around the problems of when, why, and how to withdraw ventilator support. After a period of study, that was meant to give the criteria a scientific foundation, and committee recommendations, which were meant to back the science with social authority, the criteria for brain death determination were codified, alongside the traditional cessation of heartbeat and breathing criteria, in the UDDA, eventually adopted by most states (President's Commission

1981; Lizza 2006). Though they were presented as complementary, inclusive and non-contradictory, the assumptions holding up the two oppose each other. The somatic or bodily crietia of death (heartbeat, breathing) views bare animal life as the significant measure, an absolute view of being as opposed to not being, regardless of capability. This view is most rigorously espoused by religious factions contesting consciousness- or brain-based criteria. Secular brain-based criteria of death assume that consciousness is the important measure of value in human beings, marking human life as different from bare life through special faculties such as rational thought. Consciousness is a notoriously difficult issue to settle because there is no satisfying account of how its apparent immateriality, its subjective experience or qualia, can arise from (or be reducible to) material or biological causes. Yet, the measure of consciousness (its presence or absence), the measure of the secular criterion of personhood, is taken through material indicators – signals in parts of the brain.

The secular mapping of the presence of consciousness on to brain activity (or rather on to the detection of brain activity) is fraught with difficulties, raising the question of whether personhood is being equated with consciousness or with just electrical signals in the brain. Even if it is agreed that the end of the person *should* be equated with the end of measurable brain functions, measuring instruments make differential readings regarding those functions. At the beginning, when the whole-brain death criteria were initiated, EEG measurements satisfied many, showing that at some point there was no longer any activity in the brain. More precise instruments and studies, however, showed this to be untrue, revealing a range of active regions. The criteria were then adjusted, not by including the active regions, but by making a distinction between "significant" and "insignificant" cellular regions and claiming that the newly discovered active regions were "insignificant" (See Veatch 2005 for a review). Debates between somatic

integration, whole-brain and higher brain deaths have been inconclusive and inconsistent. As techniques for detecting brain activity have become more precise, the controversy has only increased, initiating other debates, for example regarding activity in PVS patients and distinctions between whole or neocortical brain death (Shewmon 2004; Cranford 1988).

Before these technologies, death appeared more unified, with a number of phenomena, including the cessation of breathing and heartbeat, following each other within a relatively short span (Ewin 2002). Now the various biological parts of dying have been separated from each other and separated from the end of the brain and any responses from the body that modernity has tended to associate with a person. Life and death are increasingly understood as a series of occurrences taking place locally and on a cellular level (Landecker 2003). Biological death, once unified, is now fragmented. Effectively, this fragmentation of death and the technological separation of organism from personhood, leaves a continuum of physiological viability along which one's choice of a point for death, a "natural fact" about death, actually reflects one's prior notion of what makes a person, that is, the choice of the point seems to "derive its importance and value from the ethical, social and political rationale for fixing the point" (Lizza 2006: 144). Judgments regarding death and its aftermaths are socially embodied in language, institutions, modes of action, practices, rituals and law. The way in which death, personhood and corpsehood are defined, accepted or declared, even by science, is a social process which describes not death itself *but the range of conditions under which death may be declared* ***and accepted*** – or not accepted. As "natural facts" about the cessation of life are destabilized (Strathern 1992) by the fragmentation of death, new questions are raised: what is the relationship between human and person? if the biology of death is elastic, how is it placed in relation to the state(s) of personhood

by society? How do physical, social and metaphysical personhood articulate? who shall decide and how?

It may well be that the process of coming up with and instituting an actual definition of death, provided greater occasion for conflict and contestation. In most settings in the past, authority over the declaration of death reverted to the presiding physician. After the introduction of official determination criteria, a host of interests and concerns, an assemblage of experts, institutions and relatives, from doctors and nurses to the medical examiner to organ procurement agencies, entered the field as contestants to the various possible claims on the body on life support. Rather than settling the matter by providing solid criteria, the UDDA along with the UAGA in fact produced a contradictory technologically generated hybrid figure, "the living cadaver", which actually placed it beyond the sole authority of medical science. Its liminality opened it up to claims from other quarters – including kin and religious authorities.

With the definition and criteria challenged along a variety of lines, including religious and medical ones, most experts agree that below the veneer of "uniformity", the US operates under a de facto regime of death pluralism.[47] On the secular model of value-pluralism, a number of experts have begun to promote the possibility of settling on a "pluralistic definition of death", suggesting that the dying or their next of kin be allowed to choose from a range of definitions of death (Brennan and Delgado 1981, Veatch 1999, Lizza 2006), expanding the language of choice that has become a feature of all death talk and death practices. In other words, death is increasingly being accepted by physicians and scientists themselves as a social process, and sometimes, echoing cryonicists, it is even called a convenient legal fiction. For example, legal

[47] The regulatory mechanisms put into place by the UAGA also have implications for cryonics, since cryonics relies on the premises of the UAGA in order to facilitate its own procedures – though in this case, the donation is further complicated as it ends up being a gift to one self as opposed to a gift given to another.

scholar Patricia White has argued that in fact the law's relationship to death ought not be definitional, but rather procedural, that is, it should be a matter of the "application of a variety of legal rules" (White 1988). She argues, for example, that the cascade of legal consequences – disposal, inheritance, liability etc – set in motion by the declaration of death was in place before technological interventions created a different form of survivorship, a grey zone of "indeterminate cases". In the current situation, she argues, the legal rules could be applied to different states of being without needing to broach definitions of death. For example, she argues that the spouse of a PVS patient should not necessarily have to apply for divorce, which is impossible any way, nor wait for a declaration of death. Veatch (1989, 2005) presents a similar argument, appealing not just to law but a wider set of actions and consequences he terms "death behavior" that should be instituted little by little. Death behaviors should be "unbundled" (Veatch 2005:359). He regards death as the process in which a sequence of *appropriate* behaviors are triggered, which may be defined differently by different groups and initiated at different times in the process. Thus, for example, grieving may start before actual death. In this way, he suggests, death becomes a disaggregated process. For the sake of public policy, Veatch favors adopting "a default definition of death" with the provision that those who opt for a different view should have the right to consciously reject the default position and opt for their own particular definition of death.

Death pluralism would seem to fit within a liberal democratic system based on individual choice. But it faces great resistance. What are the difficulties?

Unintentionally, Veatch provides another part of the answer himself. A pluralistic regime is hard to put into place socially because the end of the person is tied up with a host of important moral judgments. The transformation of status has a very significant normative implication: we

may do to dead bodies things we may not do to living ones, for example, burn them or divide up their property – and vice versa, there are also things we may not do with dead bodies that we may with living ones, sex being only one example. This is a moral and/or normative issue, not a fact about our essential abilities or biological condition. Its rules are governed by moral standards and/or societal norms, not by what we are actually able to do or not do, but by what we 'ought' to do or not do. We cannot kill people who are already dead. Mutilating a dead body has other consequences, but in the west it is not classified as homicide. Equally, a dead person is no longer protected by constitutional rights. Such examples, he writes, "should make clear how the definition of death is used in a moral and public policy sense and why it is essential to a society" (Veatch 2005:361).

So while Veatch opens up death to a secular *tolerance* of a range of views, tolerance means that matters are tolerated only as long as they fit certain parameters of public morality, individual responsibility and social cohesion. For example, he argues that whatever the view of death, it *must* accommodate an attribution like homicide. Setting aside well-known social imbalances – based on race, for example, or issues about what makes a killing *wrongful* and what kinds of killings are tolerated - that play out in the attribution and punishment of homicide, there remains the fact that different concepts of death and the person have important implications in terms of responsibility, authority, culpability, and ownership. A dramatic example of the difference is given by Counts (1980) in the case of a suicide in Papua new Guinea, where western-style jurisprudence placed the responsibility on the individual herself while the indigenous council, considering her person in a relational or social sense, found the entire group of which she was a part culpable to different degrees; everyone in the group is to some extent or

other implicated in deaths, and is considered accountable to some extent – thus confounding, in terms of legal sanction at least, the Western legal distinction between suicide and homicide.

Neither does death pluralism solve the problem faced by cryonics. For cryonicists, an organized, well-timed suspension would increase their chances of a proper preservation. Ideally, such a suspension would have to take place before "legal" and "medical" deaths, which might take a long time to come, in the process of which the brain might accrue excessive damage. However, the cryonics organization cannot suspend a person before their legal death, for that would be considered a wrongful death, a homicide, even though for the cryonicist it would be a life-saving technique. So cryonicists are in a bind. When I met him two years before his death, the acknowledged founder of cryonics Robert Ettinger was devising ways to orchestrate his death and suspension in a well-timed but legal manner. He was old and both his wives had already been cryopreserved; his health was deteriorating and he wanted to take his own life and be suspended before the onset of harmful mental diseases that would make his survival that much less probable. He was trying to find a doctor in Detriot who would cooperate with his plan and appear in a timely fashion to officially declare his death. Whilst Michigan had no law that would charge anyone with the inability to prevent suicide, anyone – doctors, cryonicists, funeral directors – participating in the plan nevertheless would be at least exposed to charges of homicide, though they would be helping, in that worlview, to save a life. Definitions of death *always* have implications regarding such legal and political categories as homicide, and clearly, Veatch's pluralistic tolerance would not abide these radical views of death and dying.

Conklin and Morgan (1996) provide a similar comparison with regard to the termination of fetuses in the West and an Amazonian society, wherein the gravity of termination in Amazonia is based not on medically determinable criteria of viability or subjective personhood,

but on the level of social integration via ritual which the developing fetus has undergone. In relation to the West itself, animal rights activists and philosophers like Peter Singer (1994) have advocated a non-specieist orientation towards life, death and personhood in order to acknowledge that some human forms (a fetus or neo-nate) might not have the same capacity to suffer as many animals, such as a gorilla or a dog. Consequently, they argue, not only should we become vegetarians, but many such animals should receive greater protection than a range of human forms. This view would have radical implications regarding what would qualify as homicide. Death pluralism, like secular value pluralism, tends to neglect the fact that the categories of law, state and medicine are at bottom subject to determination by hegemonic values and interests. Death pluralism tends to ignore the ways in which power and authority over these matters are determined and instituted, and the sorts of implications they have *in terms of the ability both to govern and be governed.*

There is another problem which has to do with the problem of political and epistemic secularism: regardless of the particular tradition or viewpoint, the relationship between the biological organism called human and the bearer of rights called person is, firstly, unclear for all authorities involved, and secondly contested amongst authorities for "deeper reasons" that can threaten people's sense of security regarding life and death. What is at stake is not *just* ideology or reason, but existential security – or what Giddens has called "ontological security" (1991).

In his book *Modernity and Self-Identity*, Anthony Giddens (1991) constructs a theory of "ontological security" in the context of high modernity – a context in which we are exposed to a range of possible life worlds and life choices wherein "no aspects of our activities follow a predestined course, and all are open to contingent happenings" and we must face the "question of selecting between 'possible worlds'" (1991:28-29). In this case then, the problem starts not when

incompatible values come into contact and must confront each other, but right at the beginning, as something is taken on as a value or even an action in everyday life. The openness of the future, with its the range of choices and unpredictable consequences, is cause for anxiety and must somehow be managed in the interaction between society and individuals. But how?

Giddens starts with general definitions and assumptions. "Anxiety," he writes, "has to be understood in relation to the overall security system the individual develops, rather than only as a situationally specific phenomenon connected to particular risks and dangers" (1991:43). Such a general sense of anxiety is heightened in high modernity because our lives are both undetermined viz the future and largely influenced by "impersonal", "disembedded" and non-visible systems (global finance, bureaucracy, global risks viz the environment, etc.). But his assertions about anxiety depend on an assumption about the individual's *universal* need for what he calls *ontological security*.

"To be ontologically secure is to possess, on the level of the unconscious and practical consciousness, 'answers' to fundamental existential questions which all human life in some way addresses" (1991:47). He counts three categories of "Fundamental existential questions": a sense of the firmness of things and of external reality; the reality of other minds; and finitude or the awareness of death. Giddens is fully aware that this sort of thing is difficult to quantify; and equally difficult to theorise without getting bogged down in age-old and unresolved metaphysical quandaries. Consequently, he mostly relies on vague psychology – early childhood experiments on object-relations, for example (a parent leaving the room is an occasion for insecurity, which is then assuaged by the return) – but more than anything on a single underlying assumption: that we all need ontological security to get on with daily life, to not feel lost at every turn, for example, when "[t]o answer even the simplest everyday query, or respond to the most cursory remark,

demands the bracketing of a potentially almost infinite range of possibilities open to the indivdual" (1991:36). This is particularly so in high modernity, not because high modernity is inherently less secure or more open, but because it is more reflexive. The assessment of daily life involves thinking about its openness, choices and risks.

From the assumption that ontological security is *necessary* for life to continue without being crippled, a simple conclusion follows: since most people are not completely lost at every turn, then, society must somehow be furnishing us with "answers" of some sort. He places "answers" in quotes because he claims that ontological security may be attained without a secure, provable base for the "answers" as such: "actors take for granted existential parameters of their activity that are sustained, but in no way 'grounded' by the interactional conventions they observe" (37). Thus, for example, Goffmanesque rituals of everyday life – the proper handshake, eye contact, etc. – produce a core environment of normalcy that cocoons the individual. "Practical consciousness" and the structures of everyday life "provide modes of orientation which, on the level of practice, 'answer' the questions which could be raised about the frameworks of existence" (37) – so affects like trust and hope, generated by the culture, help anchor the existential dilemmas emotionally, without solving them cognitively. They provide what he calls "emotional inoculations" (39).

My argument echoes Giddens' but with some differences. First, Giddens' existential-functionalist analysis assumes that the individual has existential needs that are answered by society. Societies may answer such needs differently, but the needs are there and so the answers. However, starting from the individual erases the possibility that it is society itself that creates or causes the existential dilemmas to begin with. Where, after all, does the need for ontological security reside? Where does it arise from? Is it part of our neuronal structure or part of an

ephemeral essence of existence? What I have been arguing and will further elaborate later, is that experiences we today call existential dilemmas came about after the 17th century and were slowly developed as discourses, sensibilities and practices through the 20th century. They were not innate forms of or needs for security or insecurity.

Secondly, I think Giddens over-emphasises the extent to which the existential questions have been answered, even in his limited sense of "answer". I would agree that the existential questions have been somehow set aside as a strategy, but that is not quite enough to neutralise them. As I have been suggesting through out this chapter, the lack of grounding for the answers within the framework of science and rationality has left a void around which things (institutions, discourses, practices) have taken shape. The voids of finitude continue to be an *active*, not a dissolved or resolved, problem in social and cultural life. They create ambiguities in law and cause conflict in a range of events and disciplines where the definitions and desires of various groups are at variance and cause disruption of mainstream life-death regimes.

Personhood and Life-Death Regimes

Secular law, policy and norms of conduct in the US propose a conscious, sovereign autonomous self as the moral person worthy of protection. In this tradition, the beginning and end of "subjective personhood" is the beginning and end of rights. Over the centuries that this idea has developed, rights have expanded from limits based on other external criteria such as property-ownership, race or gender, to embrace *all who might qualify as subjective persons* – at least in theory. It has been suggested that this is a culturally specific model of personhood (Shweder & Bourne 1984) that values the sovereign individual, compared to other non-Western

views in which, for example, personhood may be regarded as "partible" or "relational" (Strathern 1998), meaning that its value derives from the thickness of the person's bonds with other beings or even external objects; rather than being fully autonomous and bounded, parts of a person are regarded as being embedded in and produced through relationships and objects such that respect or ethical significance due to a person is on the one handed accorded through those relationships or objects as well as *to* them. The western/non-western dichotomy of this anthropological view has been challenged (Battaglia 1995b): informal Western practices do accord value to relational and partible aspects of personhood, and conversely, non-Western societies in turn tend to value individual agency as well (cf Lindenbaum 2008). As Harris (1989) has noted, anthropologists have used a relatively wide set of concepts – individual, self, person, personhood – interchangeably and sometimes confusingly when dealing with matters regarding personhood. Most anthropologists today seem to accept personhood as a dynamic and changing concept shaped by complex social relations – a definition that comes close to the way Radcliffe Brown expressed it two years after Mauss' celebrated essay on personhood: "Every human being living in society is two things: he is an individual and he is also a person. As an individual he is a biological organism…. The human being as a person is a complex of social relationships…" (Radcliffe Brown 1940).

For a long time, and for all intents and purposes, social personhood was a status accorded to live human beings. That is, all moral persons were live human beings, even if not all live human beings were treated as persons. Even in societies with practices and beliefs based on various afterlife models or on dualistic conceptions of body/spirit (or mind), there is always a transformation at death, in one way or another marking a change of status – what continues beyond death is not exactly the same thing, the person as live human being, but another version,

with a different set of attributes and usually bereft of a physical human body. So even in those cases, one could say that the continuity in the after life took place once the physical living body had died. Death may be termed the decoupling of personhood from biological life. Until relatively recently, then, it was some version of what might still be called "the person" (though transformed) that was said to survive the body – if anything survived the body at all. Now it is the living body that seems to survive the end of the person. American contests over abortion and life support are determined precisely by the attempts to decouple or recouple the biological organism and the person – positions that in turn have been mapped on two political groups and domains of authority: the religious right and the liberal, secularized center. However, the increasingly common separation between person and human has enabled other conceptions of personhood above and beyond the biological human being. Think of the range of views on animal rights (including Singer's, above). I will go on to examine other examples including "informatic personhood" and "suspended personhood".

Views about the separation between the human body and the person are neither new nor exclusively western. The ways in which these views and their categories find social form change. Their features as social categories tend to emerge in use, as they are instantiated in institutional and legal practices, in social conflicts, in ethical decisions and technical or technological applications. Stable or not, death, life and person co-constitute each other: a redefinition of death would have consequences regarding life as well as personhood. In all three cases, their definitions and functions have changed radically through the processes of secularization.

The transformations expose the tenuous nature of these very basic categories and reveals the existing anxieties underlying them: that in their arbitrariness and instability they reveal the very fragility of being. Their stability is imposed, generally, through what I call life-death

regimes, which can be succinctly characterized as the set of norms, rules, techniques, laws, categories and practices or actions that manage the transition from life to death[48]. The Warnock commission, mentioned in the introduction, provides a perfect example of this sort of stabilization – what it called "allaying public anxiety". The immortalist life-death regime has the opposite effect: considering "death" to be both avoidable and reversible, it changes long-assumed fundamentals about death, flips its ontological status and so activates public anxiety. Immortalism thereby alters the other two categories as well –it alters the way life and personhood become visible and functional in society.

Using this notion of a regime that manages the difficulties and differences of the transition from life to death also lets us situate particular forms of life and (local) knowledge within larger systems channeling the death process. That is, in any given community, several different life-death regimes may be operating at the same time, with conflicting interests, norms and concepts. For example, life-death regimes may be tied to state military power – in the case of regimes of sacrifice, for example, which delineate what is worth dying for, who is to die and who is to benefit from the death; they may be tied to the law – in the case of coroners, for example, who read the body of the dead in order to settle, one way or another, the case of dubious or suspicious deaths, even when next of kin prefer not to (Timmermans 2006); or they may be tied to local social groups, such as religious minorities, whose practices and doctrines regarding the passage between life and death and what may or may not be done to the dead stand opposed to the practices of dominant administrative and regulatory structures. While life-death regimes are always subject to negotiation, each life-death regime works to stabilize and manage our

[48] For this concept of a life-death regime I draw on Lakoff and Collier's (2005) notion of a *Regime of Living* along with Metcalf and Huntington's (1981) concept of *deathways* and Walter's (2005) closely related *deathwork*.

relationship to ambiguous and uncontainable aspects of life and death, producing 'ontological security'. However, as I've argued previously, Giddens ignores the extent to which death-related mediations and systems are rife with conflict and diversity, as exemplified by contested wills[49].

Like any regime, a particular life-death regime seeks stability. Disrupting a central category or norm causes confusion and conflict with domino effects through and beyond the regime. But a regime that is meant to stabilize and normalize an inherently charged and ambiguous process such as death is particularly prone to disruption. That is because life and death issues both embody and activate significant metaphysical assumptions and raise possibly unanswerable "ultimate questions". Life and death are anchor categories, affecting assumptions, or reasons, regarding life itself, regarding what a person is, when a person is no longer a person and whether life is necessary for an entity to qualify as a person. As we saw, these matters have basic moral and legal implications, as well as social and experiential impact. Shifting the boundary between life and death affects everything from (human) rights and notions of the good life, to inheritance and criminal law.

In a secular system without recourse to ultimate values, and at a time when medical technology is constantly destabilizing ontological boundaries, the ontological security offered by life-death regimes is internally unstable and being daily challenged.

The instability of these categories is significant not because it indicates philosophical inconsistencies, but because to most people it indicates existential insecurity and social chaos. When assumptions about categories such as person or death are effectively and publicly challenged, a wide array of questions, anxieties and suspicions follow, presenting us not simply

[49] This suggests that the 'will' is also an instrument that by creating an exchange between the dying and the living shapes conduct (Manderson 1999) – for the deceased, before he dies, as he goes for many years thinking about how to leave a legacy, whom to care for, what matters; as well as for the life of the survivors who live with that legacy through that instrument, contested or not.

with the prospect that we don't know what death is or what a person is, but that in not knowing or assigning some authority to these basic categories, we are facing a society in the throes of potential chaos. The inability to stabilize these key categories indicates *an inability to govern and be governed (protected, secured)*.

The possibility of this sense of instability is heightened if within one group, several different definitions and regulations are operative simultaneously. So despite exhortations in favor of pluralism, the state seeks uniformity. That is precisely why the US government, through its national conferences on uniform state laws, has tried to persuade states to adopt the laws nation-wide. The UDDA is a well-known case in point, but other acts have also attempted to create uniformity. One other relevant example is the Uniform Vital Statistics Act, which relates the duties of the state board of health in collecting data about death (and birth), including the manner and time of death. The statute requires that a certificate of death be filed and the cause of death must be medically certified on the form by a physician. It also gives power to the board of health to designate the rules for the removal and transport of the body, though the specifics vary from state to state (Bernard 1979). The collection of such data is important to the state for two reasons. The first may be broadly categorized as biopolitical – that is, it involves the collection and systematization of knowledge about the health status of citizens, knowledge which may be mobilized for governance (ie planning, health measures, etc). The second is procedural, in so far as proof of who died, where and when, is necessary to resolve a number of consequent matters specific to the case, such as inheritance and insurance claims. Under both, however, lies the space where existential status is also inscribed, where life and death can be confirmed, identity uniquely and concretely registered, though sometimes these designations can be arbitrary.

The problem of arbitrariness is raised when we face the prospect or the admission that questions that seem fundamental – what is life, what is death, what is a person – turn out to have no real answers. The tense relations over the practical implications of life-death ambiguity, say for someone in a coma and their relatives, heightens a sense of the arbitrariness of being, of individual vulnerability and existential fragility: we can't even know for sure how to determine whether we still *are*. The transition between person and thing, being and not-being, is fraught with difficulties. Biopolitics, then, may also be considered in relation to methods of officially fixing and stabilizing such indeterminate and fragile existential states that may impact a sense of self, and the possibility of its continuity within and through the social. In this sense, too, we can talk about a need or desire *to be governed* as that which has to do with the need to feel protected and the desire to have this existential fragility anchored. Anne Taylor (1996) makes a similar argument about the Achuar, where she points out that the death of another impacts the construction of selfhood because the self is understood wholly in relation to the other, in relation to others' views, stories, assessments of one self and therefore *their* death creates a hole in the construction of one's self, as though an area of the mirror's surface had suddenly become unreflective. Another person's death underlines not only *a vulnerability in relation to death, but the very instability of being a particular self.*

As I'll explore later, this instability of selfhood has particular dimensions and dynamics in a modern secular landscape of finitude, where the fragility and contingency of being has taken on a reflexive mantle; meaning that *the contingency of a particular being is highly emphasized* due to lack of ultimate values, stable histories or rules, the elimination of the afterlife and the development of a worldview that includes the possibility of the absolute end of the species, the earth and even the whole universe. Secular life-death regimes, which, despite the rise of liberal

ideologies of choice and patient rights, are basically in charge of administering the transition between life and death, carry the burden of normalizing these effects and difficulties, parceling out authority over them to specific experts and domains, from kin to astrophysicists to medical personnel. Life-death regimes cushion that sense of the fragility of being, though not always successfully or coherently.

I consider Immortalism (and especially cryonics) not just because it disrupts various life-death regimes, but because in that disruption it reveals the conflicted relationship between what are often considered metaphysical (and therefore stable) assumptions regarding death, life and personhood and the regulatory and socio-economic procedures and negotiations that actually instantiate them, even create them in practice. By following specific cases, I will show how cryonics produces its suspended subject in relation to legal, ethical and medical procedures and categories in a liminal zone that heightens the inherent instability and indeterminacy of the life-death transition in contemporary society. Tracking this process, I hope also to demonstrate the various ways in which experiences of life and death in general and the conditions for understanding, representing and altering these categories appear to us through the nodes of the regime, from life insurance to the office of vital statistics. That death, and consequently personhood are activated variously means that in social processes there is a de facto pluralism of personhood. Since notions of personhood are not explicit and precise ("the ungroundedness of what is meant by 'persons'" (Wolfe 2010:61)), but embedded in and produced through life-death regimes, immortalist disruptions of the existential normalcies produced by regimes both entails the production of new forms of personhood and the production of an existential crisis within dominant regimes, expressed, as we'll see, through institutional language and legal questions.

A Third State Between R and S

"The state of 'death' is nothing more than a physician admitting he is unable to restore a person to life, that this decision as to when a person dies will vary from doctor to doctor, place to place and most important from time to time," wrote veteran cryonicist Mike Darwin in 1983. "A person suffering a cardiac arrest in a hospital cafeteria will have a radically different prognosis than the same person with the same condition on the crowded streets of Bombay... We understand that as progress in our understanding of physiology and medicine is made and translated into improved medical technology we are able to recover more and more people from so-called 'death.' In short, we believe that today's physicians are likely mistaken when they apply the label 'dead' to cryonics patients. We believe that a more accurate statement of fact is that cryonics patients are neither dead nor alive, but in a third state: that of uncertain waiting."[50]

During that period of "uncertain waiting", the important thing, as cryonicists see it, is to keep the brain, the seat of the self, in as good a condition as possible, with its structures in place, and without any risk of further decay. In order to prevent further damage and cell death, cryonicists are cooled down upon legal death and stored, or suspended, in gleaming vats of liquid nitrogen called cryostats. In there, all metabolic and biochemical processes are halted at minus 196 degrees Celsius, a temperature at which virtually nothing happens. Since this is a matter of life and death, it's best to be precise about *how much* nothing *actually* happens: biochemical reactions that take 6 minutes to occur at a normal 37 degrees Celsius, would, at a temperature of -196 degrees Celsius, take 100 sextillion years (Best 2008).

[50] Darwin, Mike. 1983. "Why we are cryonicists". *Cryonics*. January 1983.

In this example, the choice of a six-minute timescale by the cryonics researchers is not random. Conventionally, six minutes is considered to be the time it takes after cardiac arrest for ischemic damage to result in final, irreversible brain death.

But for cryonicists biological time is elastic time: You can stretch it, and if you get in there quick enough, right after the properly authorized person pronounces death, and you start stabilizing the body, cooling the head and circulating blood and oxygen, you can eventually, perhaps, expand that 6-minute window into 100 sextillion years.

"It's like hitting the pause button," is how one cryonicist put it. "Except the pause button can last decades or hundreds of years…"

The trouble cryonicists keep running into is that everybody else works only with Play and Stop buttons. Pause buttons are not an option. Not, at any rate, an indefinite pause button, a total but *not* irreversible stillness. Even with comatose patients, there are signs of animation, of vitality, of movement. The heart is still beating, even if aided by machines, some organs and cells may function, hair will grow, the brain buzzes its electrical signals at low frequencies. And then at some point, as the saying goes, we tend to pull the plug.

"If a person is asleep they retain their personhood," Todd Huffman, a cryonicist trained first as a nurse and later as a molecular biologist, told me. "If a person is in a coma they retain their personhood. If a human is in a coma and has brain damage to the point where there is no hope of retrieving their identity, then they are not a person. So to me the distinction between a person and a corpse is whether or not there is a reasonable hope of them regaining consciousness. With a cryonics patient I think there is a reasonable chance of them regaining consciousness. *The time gap is irrelevant*."

So in that period of uncertain waiting, all those cryonicists on pause, in suspended animation, cannot be treated as mere corpses, not by the cryonicists themselves. They're only dead as far as legal, medical and social convention are concerned. As far as the cryonics facility is concerned, these members are not quite dead. They have temporarily *deanimated*. Secured under lock and surveillance cam, those cryopreserved bodies are not called corpses; they are called *patients*. They have patient files, patient numbers and are maintained in the Patient Bay. At Alcor, named after a dim star in the handle of the Big Dipper, their patient portraits adorn the conference room walls. The Alcor conference room also has a viewing window, giving on to the Patient Bay, through which you can see the vats holding the bodies of the members whose pictures line the wall. It makes for a recursive loop of stillness: time frozen in the photographs, time frozen in the tanks.

Here in the conference room, I, the anthropologist, get my first training in Stand-by and Stabilization procedures. All the "cryonics natives" are pretty much white, male and self-defined atheist rationalist geeks. "Anita" is an exception only in her gender. I mention Anita because I think of her often, the way she stood looking at those pictures and then at the cryostats and back. How she gestured at the people in the photographs and said, "Oh, I envy them. I want to be up there already. I've been thinking about which picture I would put up and I think I have one."

Like other cryonicists, Anita, so impatient to not die, to join the pantheon, knew there is no other place in the secular realm to come to die, if you hope to live again.

The equipment laid out on the conference room table consists of a chest thumper, to circulate blood, and a CPR mannequin, with a blue torso and a mouth half open. The training was led by a former EMS nurse, "Jenny", who was then in the employ of Alcor but was not a cryonicist herself, and the firemen from the local station who, thanks to Jenny's experience, had

slowly warmed to cryonics, meaning mainly that they had reduced their giggles to an occasional snicker or joke. Jenny was a thorough instructor, taking us through our paces in the art of resuscitation: chest compressions, pinch the nose, lift the head, mouth to mouth. For cryonicists, this is crucial because it keeps the body, and more specifically the brain, oxygenated so that even if the heart has stopped, the brain cells don't kick into apoptosis. Apoptosis is the scientific word for 'cell suicide' a somewhat mysterious process by which cells understand that the end is near and decide to throw in the towel. Our chest compressions and mouth to mouth would help prevent the cascade of apoptosis, would help save the legally dead person from more dying.

Suddenly Jenny stops the whole thing.

"Not too hard," she warns us. "What you wanna do is, you just want to circulate the oxygen and the blood, but you don't want to go *too* hard. It'd be bad if you got the heart going and ended up with a live person again. It would defeat the purpose."

We, the novice trainees, looked up a little confused at first. It was one of those ethnographic moments when the space-time fabric rips open and you find yourself in a parallel universe, where everything looks the same but is not.

"That's why we call it Cardiopulmonary *Support*, not Cardiopulmonary Resuscitation, CP**S** instead of CP**R**," Jenny explained.

At the end of the training, we also receiveD a certification in basic CPR, but what stayed with me was the single difference between the world of resuscitation and the world of suspension. The distance between R and S, that, as in the alphabet, is no more than just a breath apart, is the space of suspension, where the *patient* is understood to be retrievable according to cryonics standards but is irreversibly dead according to legal and medical standards, opening up an ontological wormhole, an infinite bracket between two fixed states, allowing us to think of –

or think with – a third, liminal state that may be considered neither alive, nor dead, an undetermined state of uncertainty that exists and operates in the cracks between the rules and regulations, the normalities and certitudes of the entire social apparatus that determines the process of dying, that sorts being from not being. But unlike the usual Turnerian liminalities, in this case our subjects are not returned to a new and determined social status; this is indefinite liminality. To view and understand the world as cryonicists do, you must be able to occupy this third space cracked open by the cryopreserved subject, to live its consequences through.

Things can get really dizzying when you understand death differently, when you think of it not as a final irreversible moment but as a series of potentially reversible events. If it turns out that future medicine will be able to reanimate the suspended, then the rest of us are all dying unnecessary deaths, aren't we? Shouldn't saving these lives be a priority? Setting aside that sort of ethical game, a game played by cryonicists and other advocates of radical life extension in order to legitimise and promote their projects, the cryonics procedures challenge a large number of rules and regulations, social norms and accepted concepts. Can the cryopreserved person keep any money in the bank in case of future reanimation? What happens to life insurance? Is the cryopreserved body subject to the regulations of the funeral board? What does the Medical Examiner enter on the death certificate? If you die in California and must be transported to Arizona for cryopreservation, what rules apply? What if you have Alzheimer's and want to be cryopreserved before your brain is entirely laid to waste? If the person is indeed reanimated, will he or she be the *same* person? What criteria might determine that? What kind of implications does *not dying* have? What attendant anxieties?

These are not just speculative questions. From an ethnographic standpoint, they are questions that cryonicists, like many others in the radical life extension community, live with and

work with everyday, questions that affect their selves, their practices, their ideas and conduct. They are also ethical questions, requiring judgments and determinations that have larger implications regarding the changing relationships between the categories of death, personhood and life.

It is just this sort of uncertainty that makes people and institutions uncomfortable with cryonics. "Something about the mental images that come to mind puts them off," the current Alcor CEO Max More has suggested. "It doesn't happen in the case of regular burial, which to me is fairly disgusting. You get put in the ground, you get eaten by bacteria or get put in a big oven and your head explodes. But for some reason the idea of being in a suspended state worries people. I think because it is so uncertain. With burial or cremation, you are pretty sure what's going to happen. But with the uncertainty of being stored in liquid nitrogen for an unknown amount of time, not knowing who is going to take care of you, whether the organization is going to survive, what the future is going to be like…. The uncertain status – are you alive? No. are you dead? No..."

What's Not A Cemetery

While no law has been written to apply specifically to cryonics, where state institutions, the law and cryonics have intersected, a confusion between the categories of life and death, person and corpse has arisen. One effect has been to confound the state and the law regarding their classification of cryonics. For example, Alcor is legally understood to operate in Arizona as a "procurement organization" to which bodies may be donated for "scientific research". Conversely, the Cryonics Institute (CI) in Michigan is currently being regulated as a cemetery,

though its claim is that it is actually preserving lives not disposing of dead bodies. How was this discrepancy produced? What implications does it have?

Through 2003 and 2004, cryonics faced one of its great recent legal and bureaucratic challenges in both Michigan and Arizona. The trouble goes back to celebrity, to cryonics advocates' conviction that they need some well-known, popular stars to sign on publicly in order to finally get their adventure off the ground, make it popularly acceptable. It's a desire that goes back to the earliest days, to Ettinger's appearances on Johnny Carson and other TV shows, to the almost-ran Life Magazine cover, to all the famous actors and writers who flirted with the idea or even advocated it, before dropping out. Cryonicists want a Sputnik, a proof of concept. But they also want a Walt Disney, a real one not an urban myth.

Instead, cryonic suspension and revival have become a staple of science fiction, the butt of "weird news" articles, the premise of a few comic films (Woody Allen's *Sleepers* is regularly cited), and grist for the celebrity rumor mill, which since Walt Disney's death seems to have been fascinated by the prospect that American icons might be preserved in a suspended state – the fetishisation of fetishes. Recent celebrity rumors have included American Idol's Simon Cowell, who was reported to have mentioned cryopreservation as his desired means of disposition, a statement he later retracted as a joke; and Michael Jackson, who was reported to have shown interest before his death.

Nevertheless, both radical life extension and cryonics have gained some more serious, mainstream media attention in recent years. But the consequences of media attention are unclear at best. For one thing, media attention has historically led to controversy for Immortalists, and particularly cryonicists (see Chapter 1). Mainstream media attention does seem to increase inquiries and web statistics, according to both of the US-based cryonics organizations, Alcor and

the Cryonics Institute. For example, according to an administrator at Alcor, requests for applications doubled in the month following the airing of the Barbara Walters special. However, the spike rarely leads to major commitment or a corresponding increase in membership and contracts. Even as membership in these groups has been rising steadily, the growth has been incremental and slow. Though mainstream media coverage is often coveted, it does not provide an automatic source of credibility for Immortalism.

For its version of Walt Disney, in 2002, Alcor got Ted Williams, a baseball legend known also by the nickname the Splendid Splinter. According to a controversial Sports Illustrated article, when Williams' son discussed possibly making Williams' case public, then-CEO of Alcor wrote back saying, "it would be huge… the Williams name can be expected to provide Alcor with a fund-raising and membership-enhancing leverage wedge it has never possessed" (Verducci 2003). But it seems like Williams did not want the case to go public. When the time came, the name remained a secret and Williams was given the case number A-1949. The secret would not remain hidden for very long. With their big celebrity, Alcor got themselves a big mess.

Williams' case has been the most controversial and widely-covered case in cryonics, easily eclipsing the Chatsworth disaster. Williams died of cardiac arrest in a hospital in July 2002. According to a note written and signed on an apparently stained piece of paper, Williams wanted to have himself and his family cryopreserved. The note was also signed by his two children from his third wife, John Henry and Claudia Williams. John Henry had contacted Alcor when his father fell ill and managed the contract and transportation arrangements with Alcor. A half-sister from Williams' first marriage, Bobby-Jo Williams Ferrell, however, contended that the signature was fake and that Williams wanted to be cremated, as per a will dating back to

1996. This much is not unusual. Cryonics is beset with post-mortem family feuds of this sort. Tanya Jones, director of Alcor at the time I spoke with her, told me that this happens or comes close to happening almost every time. She believed that money was the motivating factor, not the wishes of or respect for the dead. "They go to court. The judge usually gives us the body, and gives them the money. When it comes to the money, they [the judges] say things like, 'I have to think of the living'. So the family get the money and move on."

Which is just what happened in the Williams case. Bobby-Jo took Alcor and her half brother to court. The judge ruled that the body be kept at Alcor, but split the $645,000 Williams trust three ways, evenly distributed between the children. For years, Alcor itself had trouble collecting the fee of $110,000 from John Henry for the cryopreseration.

But the most important result of the case was not the redistribution of the trust, but the fact that the court case made Williams' name public. The Sports Illustrated writer, Tom Verducci, took on the task of investigating the episode and managed, in the process, to coordinate a 'scoop' with the then-COO, a man by the name of Larry Johnson. Despite a non-disclosure form he signed as COO, Johnson gave documents, pictures, names, and other details to Verducci. The article (Verducci 2003) would suggest that Alcor perpetrated fraud and that it mistreated the head of Ted Williams – describing holes and cracks in the head in a gory, horrifying tone (as described in chapter 1, "cracks" actually refer to fissures that may or may not take place during the cryopreservation process as the cryopreservant solidifies like marble – the article, however, made it sound like the whole head was cracked, like an old roman statue). A week before the article was published, Johnson quit as COO of Alcor and took a large number of documents with him. He would soon get a contract to write his story for Double Day, a book that finally came out in 2009 and re-awakened the Ted Williams case whilst accusing Alcor of

general fraud[51]. Alcor has charged Johnson for defamation and breach of contract, but Johnson, who moved out of state, consistently failed to appear for the court-dates in Arizona.

At the time, the Sports Illustrated article caused wide-spread furor. From Baseball fans to animal rights activists, everyone was protesting, suddenly having their view of the great evil, cryonics, confirmed. Government at various levels took notice. Not just in the desert of Arizona but all the way out in Michigan.

On August 26, 2003 The Michigan Department of Consumer and Industry Services (CIS) issued a cease and desist order to The Cryonics Institute, based in Clinton Township, a little suburb north of Detroit. Looking into the matter, the State had noticed that the Cryonics Institute (CI) was not licensed and therefore was operating "outside the scope of the law", subject to no oversight or regulation whatsoever. The trouble was that the State of Michigan seemed uncertain about the exact nature of the Institute's business, not because the activities had been kept under wraps – to the contrary, almost everything that needed to be known about the Cryonics Institute was quite clearly delineated on their web-site and in their charter. Ettinger, founder of CI, who was involved in the dispute claimed that:

> we operated for many years without any regulatory oversight and we operated very openly. Everybody knew about it. In fact when we applied for our articles of incorporation, our charter from the state, they recognized that our purposes were unusual, and the attorney general gave it a special review and they said

[51] For a rare mainstream defense of John Henry Williams (though not necessarily of Alcor) see Ross, Brian. 2009. "Ted Williams Head: How SI and the Mainstream Sports Media Gave John Henry Williams a Bum Rap". *The Huffington Post*. October 6, 2009. Last accessed September 2010 from: http://www.huffingtonpost.com/brian-ross/ted-williams-head---how-s_b_311235.html

> ok they didn't see any problem with it, so we got our charter, our articles of incorporation, which plainly state that our purposes. And when we bought our first facility in Detroit. A small facility in Detroit, We did not go to the city for any special permission, any special license, or anything like that, it didn't seem o be necessary, and it wasn't. Then when we moved out here, and bought this new building, this much better and much larger building in Clinton township, we went to the township administration first of all and sat down with them and told them exactly what we were about and what we were gonna do and made sure that they didn't have any objections and they didn't.

According to Ettinger, the county and state were aware of CI's activity – "there were even newspapers articles from time to time." They had expressed no objections. In addition, CI was a registered non-profit and was affiliated with a funeral parlor, so its activities were already under regulation in many ways. "It was all in the open and everybody knew about it and nobody was concerned," Ettinger continues. "But then that Ted Williams thing came along…"

The State was not uncertain that the Cryonics Institute was operating in Michigan and had dealings with dead bodies; but when it was forced to face the matter, it just didn't know what to make of it. The Michigan CIS nevertheless took the public position that it was not even aware, until the Ted Williams scandal, that CI was doing what it was doing in Michigan. So it charged its Bureau of Commercial Services, which is "responsible for assuring that more than 335,000 licensees for 26 different commercial occupations meet the minimum standards for operating in

Michigan" and that they "are operating legally and competently"[52], with an investigation of CI. According to a funeral director who has served on Michigan's Board of Funeral Directors, the investigation was actually initiated by the "local cemeterian's complaint to the board." Due to cases where escrow funds for cemetery upkeep and storage had been usurped by funeral directors, the state had recently regulated cemeteries and funeral homes in stricter ways, separating the codes and rules for the two. Jim, a funeral director working closely with CI, explained, "In Michigan, cemeteries can't own funeral homes and funeral homes can't own cemeteries. That's just in 3 states. So cemeteries had different regulations than funeral homes. So there were all those sorts of problems. And then Ted Williams happened, and cemeteries said ok if you are going to control us what about them?"

Cryonicists, however, didn't see this incident as an internal administrative matter. On the one hand, they tended to see this as a problem of hostility and competition. The funeral industry, they said, wanted to have a share of cryonics, it wanted cryonics to be part of its domain of business in case everyone suddenly started "to go cryo". On the other, they took this as a threat to their survival – a matter of life and death being regulated by the department of consumer services.

The Michigan CIS insisted that one way or another CI had to come under regulation in order to protect consumers. Having insisted, however, it now had to make some determinations.

"Our investigation revealed the Cryonics Institute is clearly operating as both a funeral establishment and cemetery without any state oversight," CIS Director David Hollister finally concluded. So because it had to designate the Cryonics Institute as something, the State decided

[52] Statements from the Michigan Bureau of Commercial Services, website, http://www.michigan.gov/dleg/0,1607,7-154-28077---,00.html (last viewed on Nov 14, 2008). The Bureau is now part of the Michigan Department of Labor and Economic Growth (DLEG).

to call it “an unlicensed mortuary science establishment and a non-registered cemetery… maintaining a mausoleum for crypt entombment for more than 40 human bodies” (Michigan DLEG 2003). It was not stated that the “the crypts” were large insulated tanks full of liquid nitrogen, that the bodies were being kept at a temperature of -196 degrees Celsius, and that the “more than 40 human bodies” thus stored were considered by CI and its members as not “entombed” but “cryopreserved”. Michigan cemeteries, funeral establishments and the practice of mortuary science are licensed and regulated by the Bureau of Commercial Services. The Bureau’s Cease & Desist order required that the CI facility provide “proper maintenance for the 40 bodies currently in its care”, but that it should not accept “new cadavers”. Emphasising “cadavers”, it recommended that the Cryonics Institute become either licensed as a funeral establishment or registered as a cemetery. As mentioned, State regulations now do not allow one establishment to serve in both capacities. What this implied for CI was a bit of a Catch-22. A cemetery can store bodies but cannot “prepare” them, and vice versa. Thus, if CI were designated a cemetery it would have to carry out its initial perfusion and cooling operations outside of the premises. For a practice in which time is crucial and the procedures are not standardized, this could create problems.

In the official press release, Hollister said, “Our ultimate goal is to encourage the Cryonics Institute to take the necessary steps to come in compliance with state law.” That meant taking the simple formal step to get registered and licensed as a cemetery.

The Cryonics Institute and its members were not happy about the recommendation and what it implied. They had been operating in Michigan for over a decade without regulation partly because there was no regulation or category they could find that fit their business. As far as they were concerned, Cryonics Institute was not receiving cadavers, running a mausoleum or

cemetery or dealing in any way with dead bodies. The organization did not hide the fact that it had human bodies in its care and that the bodies had been declared *legally dead*; it's just that as far as the Institute and its members were concerned, they were *only legally dead,* and not *truly dead*, the way they are in cemeteries.

Explaining the conflict with the State of Michigan in the Institute's newsletter, The Immortalist, Director Ben Best wrote, "CI's purpose is to attempt to save lives, not to store dead bodies" (Best 2004). Consequently, in their view, the Cemetery Commission of the Department of Labor and Economic Growth had no real jurisdiction over this matter. But then again it was not clear which office, commission or bureau would or should have jurisdiction over "suspended" persons. Neither the law nor medical science makes room for such a liminal category. As far as the law is concerned, you are either dead or alive, a person or not.

This conflict arising from radically different views of life, death and personhood, would seem intractable but in fact by the end of the year, the dispute had been settled. After discussions between Michigan's Department of Labor and Economic Growth (DLEG) and CI's lawyer David Ettinger, director Ben Best and some board members, the two sides reached a compromise, agreeing to license the Cryonics Institute as a cemetery under Michigan law. The Cryonics Institute was permitted to continue providing its services and procedures almost as before, but is now *legally designated a cemetery* and, as per Michigan law, *must carry out initial procedures at a funeral home* rather than at its own facilities as had been the case. That is to say, all preliminary perfusion and cooling now takes place in a funeral home first. This licensure, according to the DLEG press release, "provides additional protections to the people of the State of Michigan" (Michigan DLEG 2004). It was not specified what exactly the people of Michigan were being protected from.

For CI, this regulation was less of an upheaval than it might have been since they already worked closely with a cryonics-friendly family-run funeral home a few minutes away from the CI facilities. The director, a catholic, is supportive and fully familiar with and trained in cryonics procedures; in fact, having been partially trained in perfusion techniques, which are required for embalming, he has contributed some expertise to this aspect of the procedures. He frequently participated in cryopreservation procedures at CI anyway. During cases these days, CI employees go to the funeral home in order to assist in and monitor the preliminary procedures. Once the perfusion is completed, the body is transported back to CI, slowly taken down to lower temperatures and finally stored in the dewar at CI, designated legally as a cemetery.

CI was happy enough that it could operate normally again and provide its services to the signed up members but many members of the Cryonics Institute still bristle at being labeled a cemetery and being regulated under laws pertaining to dead bodies. However, some of the membership think that being regulated is actually safer because at least now they can't be made "illegal". Though they are operating against the grain of the law, they are at least inside it and in fact, through the process of regulation, cryonics was given a sort of special status. It is striking to notice that the State of Michigan's final press release refers to the cryopreserved bodies as "patients". "Patients," reads the document, "will still be stored at CI's facility in liquid nitrogen." The reference to "cadavers", which had been used emphatically and abundantly a few months earlier, vanished altogether from the official press release. The cryopreserved bodies formerly designated as cadavers had been transformed into patients; yet the State of Michigan did not feel the need to explain why it was acceptable to it that "patients" should be frozen in LN tanks, or be regulated according to laws pertaining to corpses.

In 2004, the Arizona legislature initiated similar efforts to regulate Alcor – a legislative

battle which Alcor's experienced lobbyist, Barry Aarons, told me was "one of the meanest, toughest" ones of his career. Like the Michigan event, this challenge was also in part initiated by Arizona's State Board of Funeral Directors and Embalmers along with a new state representative, Bob Stump, who wanted to sponsor his first piece of legislation. The Ted Williams controversy provided the impetus. Rudy Thomas, Head of the Arizona Board of Funeral Directors at the time, began to drum up support for a bill to bring cryonics under the board's jurisdiction and regulate it in order protect Arizona consumers. During the Williams debacle, Thomas had told a New York Times sports reporter that "These companies need to be regulated or deregulated out of business."[53] He made similar comments to the Arizona Capitol Times throughout the legislative process.[54]

Work on drafting the bill started in October of 2003 and by January 2004, Stump along with Thomas were pushing for a hearing which would come in February. The proposed Arizona House Bill HB2637, introduced on February 6, 2004, suggested two principle amendments. First (under Title 32, the regulation of "Professions and Occupations", Chapter 12 "Funeral Directors and Embalmers") it required any entity that stores dead human bodies or remains for a period of more than five years to be licensed or registered under the Arizona State Funeral Board of Directors and Embalmers. Second, (under Title 35, the regulation of "State and Local Boards and Departments of Health", Chapter 7, "Disposition of Human Bodies", Article 3, "Revised Uniform Anatomical Gift Act"), it prohibited any entity that charges a fee for receiving dead

[53] Sandomir, Richard. 2003. "Odd Outpost of Icy Immortality in Sunshine State". *New York Times*. October 14, 2003. Last accessed September 1, 2010 from: http://www.nytimes.com/2003/10/14/us/odd-outpost-of-icy-immortality-in-sunshine-state.html?scp=1&sq=rudy+thomas&st=nyt

[54] See for example: Arizona Capitol Times. "Lobbyist Questions Need For State Regulation Of Cryonics". January 30, 2004.

human bodies or remains from participating in the Arizona Anatomical Gift Act (AAGA)[55]). The bill was obviously trying to box cryonics, which stores 'remains' for more than five years, into the funeral industry and bar it from acting under the Anatomical Gift Act. Whilst it was specifically aimed at cryonics, however, the bill would also have an obvious impact on organ procurement and research agencies relying on the UAGA. The organ donor's lobby, concerned that research institutions might be affected, sided with the cryonicists.

Alcor's lobbyist, Barry Aarons, issued a legislative appeal to House members arguing that regulation can be introduced only when there is a demonstrated public need for it and in this case there was none. Alcor, he said, is already operating under the regulations of OSHA, UAGA and the Fire code. He represented Thomas and the funeral board as inherently biased against and hostile towards cryonics, whereas Alcor was presented as a humanitarian life-saving organization. He concluded: "Alcor Life Extension Foundation is an asset to the State of Arizona as a responsible organization engaged in progressive medical and scientific research. Our mission is the preservation of individual human life. We ask that our efforts not be hindered by unnecessary and inappropriate regulation under a Board with demonstrated hostility toward us." Based on these talking points, a few Alcor members were asked to write letters to Rep. Stump and other members as well. Stump's response was that regulation was clearly necessary and in the public interest, given what had recently happened – though he did not mention Ted Williams by name, that was the allusion. In response to one of the letters, for example, he wrote: "The reasons are clear and well-known. Are you unaware of them?"[56] In his response letters, he also

[55] See HB 2637 underArizona State legislation titles and chapters, accessed on line at http://www.azleg.state.az.us/ArizonaRevisedStatutes.asp

[56] This exchange of letters was made public on a cryonics listserv, Cryonet Message #23488. Last accessed September 4, 2010 from: http://www.cryonet.org/cgi-bin/dsp.cgi?msg=23488

consistently claimed that "this bill does not cast judgment on cryonics whatsoever…It simply provides oversight of an industry that has none." Cryonicists were not convinced by this tack for the simple reason that they saw Rudy Thomas and the Funeral Board as inherently anti-cryonics and therefore regulation under their jurisdiction as a direct threat to cryonics activities. A letter by a long-time Alcor member and scientist to Republican members of the Arizona house summed up the fear: "HB 2637 would therefore empower the Funeral Board to discipline or shut down Alcor for any practice it believed to be fraudulent. The problem is that cryonics is widely believed to be intrinsically fraudulent. In fact, the Funeral Board has already publicly stated that the basic premise of cryonics is fraudulent. 'There's no difference between cryonics and cremation,' Rudy Thomas said. 'You're gone forever.' (Arizona Capitol Times, 23 Sept 2003). The law therefore gives the Funeral Board the power and justification to shut down Alcor at its whim." [57]

The small batch of letters and emails arriving around February 21st and 22nd had little effect. On February 26, 2004, an amended version of the bill was approved by the House Health Committee – meaning that it was now ready to be taken to the House floor for a vote. The bill then went through the usual ups and downs, with various amendments, negotiations, and meetings, including several between the Alcor board, the board of funeral directors and several house representatives, amongst them a staunch supporter of the freedom to cryopreserve, Rep Linda Lopez. Between March 9 and March 11 a quick series of maneouvers by Stump brought the bill to the floor and Aarons and Alcor were caught off guard discovering that Stump was lobbying house members individually to pass the bill. As a last minute effort, Alcor sent a desparate email to all its members telling them what was about to happen and urging them to

[57] Quotes from private correspondences made available to me.

email or call the AZ house representatives in order to respectfully make their case. Alcor members were incensed by news of this legislation, so calls and emails flooded the Arizona House in loud, aggressive and accusatory tones. They called the legislation tantamount to murder.

The calls did not help their case; according to Aarons they damaged it. On March 11, the bill passed the House floor too, with a number of amendments made by Alcor which lessened but did not eliminate oversight by the funeral board. Throughout March, Aarons and Alcor redoubled their efforts, attempting as much as possible to bring the donor lobby on board as well. With more time and experience, the efforts paid off. Support for the bill waned, on grounds that it was unnecessary and was regulating an activity that was already under other regulatory mechanisms, including the UAGA, OSHA, and even the funeral board's!

A funeral director who has worked closely with Alcor for years testified on behalf of Alcor in the senate against the director of the funeral board:

> One of the comments attributed to Rudy Thomas our executive director was that there was no government oversight, and it put me in an awkward position. But I testified under the senate hearing committee that that statement was false. That there's always been government oversight viz a viz the fact that they were working through and with a licensed funeral organization and by virtue of that license my records are open to the board. If they say, "were you involved with Ted Williams?", I'd have to say, "yes". "Could you produce the documents?" I'd have to produce the documents. If they had any questions about Mr Williams, all they had to do was pick up the phone and ask me, but they never did. And so I testified and it made them look bad. Rudy got his feathers ruffled but we've always had an excellent reputation and a clean record with the state. He

finally got over it. But he said, "well, we didn't realize…" Well, I told them numerous times that we represented Alcor, there was no secret about it, we were with Alcor all these years. No reporter came to my door, I was never on television, I just testified. I didn't have to, but it was the right thing to do, because there has always been government oversight.

Eventually Representative Stump and the funeral directors withdrew the bill. Alcor would continue to operate the way it always had: under the UAGA, doing medical research, and not storing dead bodies.

The process that led up to the House vote is interesting in so far as it illustrates the radical difference in the life-death regimes. What for the funeral board was a matter of regulation, for cryonicists was a threat to the *lives* of their members. The angry calls and letters that flooded the house on March 10 basically had one message: they said the bill was tantamount to murder. As the letter quoted above stated, one fear was that the funeral board would shut down cryonics in AZ altogether by bringing charges of fraud – a fear that Rep. Stump claimed was misplaced. But a more practical but no less damaging fear was not quite grasped by Stump and non-cryonicists. Being regulated as part of the funeral industry would imply that licensed embalming personnel, rather than Alcor employees, would be the only ones legally authorized to treat the "body", which to Alcor was still a potentially viable person that required specialized procedures. In Alcor's view, this would greatly damage the chances of a person's survival. In his letter of Legislative Appeal, Aarons wrote, "we employ a highly skilled neurosurgeon to implement our procedures, and the use of an embalmer would represent a significant reduction in the quality of care…" In fact, this is a big exaggeration. Sometimes there is an Alcor-linked M.D. present

during the stand-by care and immediate post-mortem cool down, but rarely is there a neurosurgeon or even a regular surgeon present during the cryopreservation process. Nevertheless, Alcor has developed their procedures through years of experience and research and have confidence in their own personnel to do the best possible and maintain their members as viable as possible according to their own standards.

For the funeral board and legislature, the members were already dead anyway, so the procedures were only important in terms of the idea of the 'dignity of the dead' or 'respect for the dead' as well as from a commercial and public safety standpoint; they had nothing to do with the *interests* of the person on whom the procedures would be carried out. For cryonicists, it represented a major threat to their project, meaning that it posed a threat to their lives and the interests of those in the care of Alcor. This discrepancy made the anger of the calls and emails appear irrational to non-cryonicists. Aarons apologized to the legislature for those "inappropriate" calls and pulled back the Alcor membership from the process. But to me he insisted that their reactions must be understood in light of their views about life and death.

> Remember that our members consider their cryopreserved state to be life… And our people got so emotionally overwrought, I actually had to hold them back. I mean some of their emails and letters and stuff were really harsh. But you were dealing with their lives. I mean they're people who believed that being cryonically preserved is a ticket to immortality. By potentially doing away with Alcor, by potentially passing a bill that could threaten the existence of Alcor, you're threatening their immortality. And they get very emotionally overwrought about that stuff. It took me a long time to reel them back into

> reality. You know, nobody was trying to kill them. They didn't see it that way. It's probably good that I'm not a member, because I can see this from an objective viewpoint.

The two case studies shuttle us back and forth between important anxieties and categories, coded and understood differently by the various regimes involved. What for state institutions is framed as a normal regulatory after-death matter (ie regulating a body devoid of a person) is taken by cryonicists to be a misinformed and threatening intervention into their practice of saving individual persons. It is not just the fact of regulation that rankles cryonicists, though libertarians amongst them tend to reject state regulation in principle. Misclassification based on different premises could threaten the effectiveness of cryopreservation – that is, for cryonicists, it could threaten lives.

As soon as the state takes the plunge into the regulatory process it commits itself to specific categorizations. It is clear that from a cryonicist point of view, the correct category does not currently exist. However, that is equally true for the state. It is quite evident from the record that the state's administrators themselves come face to face with perplexing problems regarding the classification of cryonics *given* the claims of cryonicists. In part this is due to the way in which the process of secularization has brought matters pertaining to the dead into the regulatory regimes of the state. The Department of Health through its related offices is in charge of declaring and registering life and death; as soon as death is recorded and registered, the Department of Health has fulfilled its duty. From here on, the corpse, its interests, the survivors, the businesses profiting from it are no longer its purview. Declared dead and thereby stripped of personhood by definition, the "dead" – ie cadavers and corpses – are regulated by departments

dealing with consumer services. How else could the modern state manage the realm of the dead but through an understanding of the dead as objects of consumption, albeit special objects with special rules of consumption? As we'll see further on, for the dead to become an object of consumption, even in a legally circumscribed sense, they need to be stripped of identity, culturally neutralized. Cryonics aims for the opposite.

In other part, however, the indeterminacy of the cryonics third state – the state of suspension – causes regulatory anxiety: the question not just of which column to slot this business under, but of larger questions regarding the state's ability – perhaps even the general ability – to classify, to record, to fix, and manage slippery but crucial matters such as identity, life and death – in short, its ability to govern, in a biopolitical sense. The best illustration of what I call regulatory anxiety comes from the courts themselves, in a case involving Alcor and the State of California. Some years earlier, when Alcor was still based in California, the Department of Health and Safety (DHS) attempted to bring misdemeanor charges against Alcor's work on the basis that Cryonics did not constitute "scientific research" and thus Alcor was operating illegally since storing bodies anywhere but in a licensed cemetery was against the law. Additionally, if Alcor's work did not qualify as "scientific research" then what it was doing with bodies could also be deemed illegal since those bodies would have to be disposed of by one of the only 2 then-existing categories: burial or cremation.

The DHS had to withdraw this charge since determining what qualified as scientific research was not in its jurisdiction. Subsequently, the DHS pursued the case from a different

angle[58] and then eventually gave up when the California Attorney General ruled in favor of Alcor.

A reading of the court records reveals some key concerns behind the DHS' persistence. In so far as the agency's explicitly Foucauldian duty is to keep precise records of birth, marriage and death in order to understand and manage public health, Cryonics practices and concepts seem to have raised some unusual quandaries for the DHS, blurring the clear boundaries it needs for population management and record-keeping, notching one under death, another under cremation. Presenting its case in court, the agency raised what it called some "serious questions": "Should cryonically suspended people be considered 'dead' or should a separate category of 'suspended' people be created? How should such people be registered in official records? ... [W]hat happens to the estate and the assets of the 'decedent' after the decedent is put in cryonic suspension? ... [W]hat would happen to such estate and assets if and when cryonic suspension is successful and decedent is restored to life? Whose identity is the person to assume or be assigned and what of the record of the person's death? …" (Mitchell vs Roe).

The administrative anxiety is an anxiety regarding the vulnerability of existence and selfhood which is revealed in the progression of the questions from the issue of "categorization" (should there be a separate category? How should they be registered in "official" records?) to the subject of identity (whose identity is to be assumed?) to the recording of the person's status (dead? reborn?). The policing of the boundaries confirms the power of the state. At the same time, it confirms cryonics's liminality, its ability to operate within the cracks, against the grain of

[58] The DHS claimed that Alcor was not a procurement organization because it was not licensed as one. As it turns out, Alcor was not licensed as one because the DHS refused to give it a permit. Since there were no actual criteria attached to what qualifies as a 'procurement organization' – unlike medical or educational institutions which have accreditation – the California courts recognized the circularity of the DHS argument and ruled in favor of Alcor. That ruling has been the basis of Alcor's claims to legal operation ever since.

the state's power, where its concepts fail to articulate with the state's. In the following sections what will become clear is that it is in that liminal state, in the cracks and against the grain, that cryonics actually gains, rather than loses, its power; it is in the liminal that it produces its subject. In its DIY fetishism, cryonics is a form of contestation of the contemporary boundaries of biopolitics, and the power over the body, over identity and over survival as the continuation of personhood after legal death.

A Contract to Not Die

When a cryonics subject is introduced to the idea of preserving the body and person by freezing it, usually through an article in a science or science fiction magazine, they turn first to an investigation of the general claims by doing some research on line or attending a local cryonics meet up or an open house. Since there are only a handful cryonics-related organizations, often people who are interested drive from neighbouring states for these events, in order to "meet real cryonicists" – as a couple told me who had driven up to Detroit from Cinicinatti to attend the CI open weekend – and see the organization first hand. Once a person is satisfied with the ideas, settings and claims of cryonics, he or she will begin the process of 'signing up'. 'Signing up' is the most crucial threshold, representing the real badge of membership. The question everyone asks about a person they don't know is: "is s/he signed up?"

Signing up requires an upfront membership fee, after which a contract is entered into with the organization. Entering into contract also requires signing some additional forms and securing a method of payment. The important additional forms pertain to the Uniform Anatomical Gift Act, through which the *remains* are *donated* to the relevant organizations; to decisions of the next of kin, a group that has proven often to be a major obstacle to cryonics

projects; and finally to autopsy and its prevention. Several people who were interested but had not signed up, or who finally signed up long after they had initiated the process, usually after a scare, mentioned that the complexity, and the kinds of questions the contract raised regarding death, the law and obligation to kin, made them delay or neglect the contract altogether.

Each of the two operating organizations offers different services and works with a different ethos. Alcor is known for its corporate ethos, secrecy, infighting and external scandals, whereas CI is known for its bare bones, low-cost approach and general transparency (sometimes maligned by cryonicists as a "Cryo-cemetery"). For example, with Alcor you can specify whether you want to be treated as a "full body" or a "neuro" patient – that is, have only your head frozen. There are differences in price, with neuro being considerably cheaper, a factor that certainly influences people's decisions. However, the decision rests equally on the member's views regarding the necessity or usefulness of the biological body to personal identity. Thus, those who do not believe that mind uploading will be possible or, more often, that whatever is uploaded won't "be" the same person, tend not to opt for neuro; whereas those who are uploaders or AI enthusiasts tend generally towards a neuro option, almost as a banner of their convictions.

Whereas at CI there is no neuro option, there is an option to obtain or forego what is known as "stand-by". The principle of using stand-by teams is based on the idea that the exact time of death is never known and yet, for best results, cryopreservation must begin immediately after death. Thus at the time of critical illness, cryonics stand-by teams are dispatched to homes, hospitals or hospices, with their specialized equipment, to be present when medical death actually arrives in order to move in for an optimum preservation before brain cells get increasingly and irrevocably damaged. With Alcor, stand-by is automatically part of the contract,

whereas with CI standby is a contractual option, outsourced to a Florida-based for profit outfit, Suspended Animation (see chap 1). Again, decisions regarding these options reflect people's awareness of the details of cryopreservation, their views of future medicine, their views of what *ultimately* constitutes their personal identity and their take on how much damage to the body and brain is repairable in order to preserve their personal identity. Knowledge of these matters increases after people sign up and begin exchanges with other cryonicists, subscribe to discussion lists, go to conferences and generally engage in more thorough research. Occasionally, this leads to doubt of both a general and a specific nature: from the philosophical "will the reanimated person be me" to "is there a less toxic cryopreservative solution" to the futuristic "how do we know we're going to be re-animated"?

Aside from the basic agreement between the organization and the member, a cryonics contract has a number of additional forms and declarations that are specifically designed to protect cryonicists from the disparity between their premises about life and death, and those of regulatory institutions and the dominant life-death regime. Though they are not necessary parts of the contract, they are heavily emphasised. For instance, cryonicists are urged to get additional signatures from next of kin because cryonics contracts are frequently contested by family members, which is why traditional kinship is viewed as a threat.[59] Disputes raised by family

[59] The *perception* of this threat is also gendered. Cryonicists, particularly older males, tend to think that the main threat comes from wives, a narrative that has been dubbed the "hostile wife phenomenon". The gendered view of kin hostility to cryonics is explained by appeal to studies of male vs female risk-taking and the concern of female spouses over the use of funds for offspring rather than for unproven and speculative adventures such as cryonics. The theory of the hostile wife phenomenon is based on anecdotal evidence, as there has been no proper study of the matter. Looking at the few cases that have become public or made it to court, however, it would seem that more than just the female spouse has been involved in most legal disputes over funds. The disputes are usually initiated and supported by several members of the family, probably as a function of whom the heirs are. In a recent case in Iowa for example, several family members had conspired to hide the member's death from Alcor and chose to bury the member after legal death. See Michael Darwin, Chana de Wolf, & Aschwin de Wolf, "Is that what love is? The hostile wife phenomenon in cryonics", on the *Depressed Metabolism* blog. Last accessed on October 10, 2010, from http://www.depressedmetabolism.com/is-that-what-love-is-the-hostile-wife-phenomenon-in-cryonics/

members can lead not only to a costly legal dispute and wrangling over funds, but also to what cryonicists view as mortal damage to the person – for example, in one recent case family members refused to alert Alcor upon the death of the member and actually buried the person in secret in Iowa. Whilst an Iowa court ultimately returned the body to Alcor and the body was cryonically preserved, the damage to the disinterred body was clearly already done and the preservation had to be regarded as far from optimum, drastically reducing, even eliminating, the chances of survival.

Another such declaration is specifically directed at potential kinship conflicts, also mentioned in the previous chapter. By adding the next of kin's agreement to the cryonics contract, organizations hope to avert challenges from next of kin that have proven to be a constant obstacle in cryonics procedures. Kinship is often structured and re-instituted through life-death regimes that designate, through norms as well as laws, the order of events and the hierarchy of claims, on the body, goods and status. Cryonics in particular has disrupted kinship structures and kinship claims have in turn disrupted cryonics procedures, sometimes because the family, or the spouse, is against cryonics and desires other forms of disposition, at others because the family wants the funds.

The Cryonics Institute explains the various disclaimers and riders in its contract as a way of warding off such threats from kin:

> "Much of the agreement is devoted to disclaimers, limitations of liability, and statements that the Member's estate and relatives will have little or no recourse if CI or its employees make mistakes, even through negligence. If we leave our organization open to a lawsuit on any basis whatsoever, it would not merely put our assets at risk, but also the lives of

every patient and Member. We simply can't take that risk. The disclaimers and limitations of liability in the contract are meant primarily to protect both CI and its Member patients against relatives or heirs."[60]

Since modern kin relations are so tied into legal structures that govern continuity through generational inheritance, the cryonics redefinition of death and what may be considered post-mortem inheritance also changes the dynamics of kin relations. The interests of cryonics and cryonicists are placed over and above those of non-cryonicist kin – that is, the "interests" of a cryopreserved figure are placed above the interests of the living.

Additionally, cryonicists are urged to sign Do Not Resuscitate orders: this is to ensure that futile medical attempts at resuscitation won't further damage their viability and will improve the chances of a smooth stand-by and cryopreservation process. Do Not Resuscitate is directed at medical personnel who are trained to carry out heroic life-saving attempts immediately. It was brought into common circulation by patient rights advocates who wanted to protect patients and their families from prolonged, but ultimately futile, medical care. DNR was meant to protect the patient from the indignities and complications of life support. It was meant to give the patient and the kin an opportunity for a "dignified" death. For cryonicists, there is no dignity in death; they use it to increase their chances of survival in the future.

Similarly, cryonicists frequently sign a form or declaration to the effect that autopsy goes against their "religious beliefs". Of course, this is disingenuous in so far as most cryonicists are

[60] From CI's on-line pre-amble to its cryonics contract, explaining why the contract is necessary the way it is: last accessed Sep 10, 2010 from http://www.cryonics.org/arrange.html#suspension

not religious in the way the term is intended in law. However, the legal exception does not, perhaps cannot, define religion in any specific way, especially in relation to death. It cannot make a list of acceptable religions. And because belief is the condition of religion, according to secularism, and belief has been privatised, there is no proper way to verify the religiosity of a person. What's more, death is a sensitive issue to which religiosity is attached quasi-automatically. Thus in the case of death, secular law merely designates "religion" as a general domain of exception, in which the religious can go about their death rites in any way they wish, as long as some fundamental interests of the state and its citizens in general are not damaged. Secular cryonicists squeeze themselves into the liminal space of exception without specifying a religion, yet legally taking on the exception as such. The form included in the CI contract for example is called: "Certificate of Religious Belief and Religious Objection to Autopsy" but does not require the person to specify which religion is being referred to. The person simply states that due to "religious reasons", they are opposed to autopsies.

The reason for the inclusion of this form is that autopsies frequently have been a serious impediment to "proper cryopreservation". Where suicide or accident are the cause of death or where any suspicion of foul play is involved, the Medical Examiner (ME) can immediately order an autopsy. The ME's power over the determination of what qualifies as "suspicious" is extensive, though, or perhaps because, the legal specifics regulating a coroner's activity and jurisdiction vary greatly from state to state (see Bernard 1979). This power is mitigated only by two factors: the force of the UAGA, and by the law's zone of religious exceptions. Whereas for the ME, the body is just so much matter to be examined and read and catalogued, for organ procurers operating under the protection of the UAGA the body is still full of viabl' matter, matter that, stripped of its ties of identity, can be "harvested" and reused as a "gift of life". The

ME's work can destroy all that viability (or profit). Thus between these two functions given to the dead body – the medical-economic and socio-legal – there lies a constant potential for conflict (described in great detail by Timmermans 2006).

The biopolitcal conflict with religion is slightly different. Some religious practitioners value the body's post-mortem integrity, and oppose its defilement or mutilation. The ME's work cannot be done without disfiguring the body to a certain extent, though the extent to which the body is cut up, dismembered or jumbled up may vary according to the case and the whims of the ME. All of this is why the religious exception was granted – in order to at least balance some of the arbitrariness of the invasive and defiling procedures with the interests of religious groups.

For cryonicists, who are generally fearful of the arbitrariness of authority and the bias with which most authorities approach cryonics, autopsy evokes the fear that an ME will arbitrarily order an autopsy on a person just because it was a cryonics case. Even in cases where an autopsy is unavoidable, there are ways in which cryonicists prefer to have it done – eg don't cut up the brain! – in order to maintain even the slightest modicum of a chance for the revival of the person, according to their own standards. In the final count, however, the ME, who has very different standards, also has ultimate authority over the body, which is under his investigative and surgical hands. The following account of a conflict between cryonics and the ME over autopsy, was relayed to me by the director of one of the cryonics organizations. I have heard similar reports on several occasions.

> Recently we had a case of a coroner who autopsied one of our members. He said he would be cooperative. He told [one of the cryonics workers] that he'd be respectful of the brain. *If* he did do an autopsy, he agreed to not put the

> brain in a bag. We don't know, but afterwards, this ME *did do* the autopsy, *cut up* the brain and *threw it in the guts*. And then he apparently told the Insurance Agent that he thought cryonics was a racket anyway. The insurance agent got very involved in this case, because she had known the patient and she knew that he wouldn't commit suicide and knew that he wasn't an alcohlic and all these other things this ME was *claiming*, who did the autopsy. He was justifying the autopsy on these grounds. And also he refused to give us the final death certificate! That got the insurance company involved, cause they pride themselves on a prompt payment. And this agent had actually met the fellow and she knew that the way this ME was representing him was incorrect and she was agreeing to testify about what he said about it being a racket and all these other things. She told me in conversation. But she must've had second thoughts cause then she completely stonewalled us and we couldn't contact her after that… I discussed it with our lawyer. Our legal counsel advised us against doing anything. You just end up with a judge who also thinks it's a racket.

Not all coroners or doctors disrespect the wishes of cryonics patients. To the contrary, some are touched or even changed by the cryonics perspective. A cryonicist whose husband had been suspended, described a smooth procedure in which the doctors and hospital all got interested and cooperated along with the local coroner. The husband had been diagnosed with a terminal disease and so the couple had had time to prepare. When the time came, the doctor was already aware and agreed to work with hospital administrators and the coroner to prevent an autopsy. "He talked to anyone politically involved to make sure he would not have an autopsy… They

were not hard to convince. The coroner, he said, 'Oh this is so refreshing. Usually people come to me because they want to die. Here you are trying to live!' He was a really nice man. He could clearly see that [my husband] wanted to live. And we certainly had the doc's report that he was terminal.' He said, 'it's not for me', but he didn't disagree with it."

In general, cryonicists tend to think of themselves as being at the receiving end of the coroner's power and authority. Far from allaying anxieties about suspicious deaths, the law causes anxieties, which for cryonicists literally is mortal anguish. That, however, is not enough to qualify it as an exception on its own merit. The hegemonic secularity of the law is emphasized by the fact that excetions are granted to religious people with deeply held beliefs, not materialists or secularists themselves, even where the integrity of the body is as deep a matter for one as for the other.

Afterlife Insurance

The payment for the cryopreservation process can be made up front in full or it can be secured through a life insurance policy, which is how most cryopreservations are funded. Life insurance policies are meant to redistribute property to 'survivors' or other designated beneficiaries, such as charities, after a person's death, but Cryonicists designate a cryonics organization as their beneficiary and, by contract, the organization is committed to using the funds for the person's cryopreservation and eventual reanimation. The life insurance strategy makes cryonics affordable to a wide class of people who either already have or are able to obtain affordable life insurance policies. A $100,000 policy for a healthy 40 year old is approximately $30 to $40 dollars a month – much less than a cable TV subscription. The cryonics organization of choice is designated as the beneficiary in the amount required and so upon legal death of the

insured, the organization receives the cryopreservation funds directly from the insurance companies, as was stated in the irreversible will of the deceased. In other words, a policy that is designed to go into effect when the person is dead is used to keep the person not dead. Life insurance companies can not contest the cases in a court of law because the person *is* legally dead. But they, as well as the courts of law, do live with the question it raises: what if they're not *really* dead*?*

By comparison to the context in which life insurance became popular in the United States, the cryonics strategy represents a social shift. To begin with, 'assurance' was a religious concept, reserved for the soul of the good or the saints. The growing secularization of death and dying – eg growing authority of physicians and public health officials, the collection of vital statistics, and the shift of focus to posterity rather than the encounter with death – provide one backdrop for the popularization of life insurance between 1830 and 1900. It was through the rational analysis and manipulation of biopolitcal data, gathered initially by the state and later by insurance companies themselves, that the business of life insurance could make consistent financial assessments and take risks based on a figure for average life expectancy – a biopolitical fact about which Elizur Wright, the father of life insurance, was quite explicit when he started his business on this observation: "While nothing is more uncertain than the duration of a single life, nothing is more certain than the average duration of a thousand lives" (Quoted in Farrell 1980:69)[61].

Aside from this statistical assessment of life and death, the growth of the business had to do with the conditions of labor and the demands for investment under industrial capitalism. The growing population of dispossessed laborers working for poor wages under dangerous work

[61] The rest of this history of life insurance is taken entirely from Farrell (1980).

conditions produced a serious problem of survivorship – spouses and children who would receive no inheritance, for there was nothing to pass on. Capital's solution was not to aid with the "life" of the worker, by bettering the conditions of labor, but to exploit his death through claims about future survivors. Under the term "industrial insurance", it skimmed a percentage off the policy holder's wages, which it then *re-invested* in industrial or financial projects. From the accumulation of interests, an amount was paid to the spouse upon the wage worker's death. Ironically, the amount at the time was usually so small that it tended to be all spent on the *funeral* of the worker rather than the lives of the survivors. Nevertheless, life insurance was promoted as part of the burgeoning social reform movement of the end of the 19th century. It was lauded for its "moral benefits". It was marketed as a means of making dying less selfish, of planning for the family rather than merely accumulating for the transient self. Taking on a policy was said to teach workers certain virtues and train them to plan financially, and develop "forethought and responsibility". It became, in the words of one Prudential representative, "a social and civic duty" (Farrell 1980:72). So it was that in 25 years between 1895 and 1920, industrial insurance grew from 6 million policies to 46 million. Assurance, subject to divine providence, was transformed into Insurance, subject to human rationality and secular prudence, at a time when the prospects of the afterlife had greatly diminished in the minds of the populace. The exchange of life for death was now subject to an instrumental calculus and the object of a financial transaction. Thereafter, life insurance would be an integral part of the life-death regime – its interests came to determine laws, regulations, priorities and conflicts regarding the passage between life and death.

Cryonics' inversion of this model consists in changing the notion of survivorship. In a life insurance policy used for cryonics purposes, the cryonicist becomes his or her own survivor.

The ideology of civic virtue and unselfishness through which life insurance was marketed and popularized is now turned back to an ideology of serving the self – sometimes at the cost of leaving the family and others behind, with little or no benefit from the policy. Practically speaking, this does not change the bottom line for the life insurance business, it does not alter its calculus of profits. The person is still "legally dead" and the actuarial tables still do their job efficiently in predicting over all death rates, pay out and profits. Despite the same exact profits, as cryonicists have discovered, not all life insurance companies are comfortable with the practice of issuing policies for life extension, rather than dying, purposes.

"Carl" bills himself as the "World's Leading Cryonics Insurance Provider". He is a jovial man, prone to laughter and jokes and backpatting, but he takes his positions hard and serious: he is an avid fan of Richard Dawkins and Sam Harris, meaning that he is an atheist who frequently lambasts "religious ignorance", especially if that religion is Islam – as I discovered in a number of email exchanges with him. He proclaims the virtues of science, rationality and truth. He is also a transhumanist, a libertarian and a card-carrying member of the National Rifle Association. His wife "Shauna" is a believing Christian. She is his associate in the insurance business and they work together out of their home office. Though they don't see eye-to-eye on matters of faith or of cryonics, they have managed to reach an agreeable mutual understanding and some humor. When over lunch Carl claimed that "science is evidence-based, it's an epistemology of evidence", his wife retorted, "And that's why we are in cryonics, cause it's so evidence-based?!!" There was mutual laughter. Carl and Shauna met in church. Carl grew up in a Christian household but suggests that his skepticism dawned on him early on and that he stayed in the fold because the community was important. "I actually didn't believe Christian theology when I was 10-12 years old," he says. "It seemed extremely unlikely, but still I went to Christian college and

came out to teach at a Christian school, because of other elements of this, because of good people. People can be much better than their theology, because theology – Muslim, Christian, Judaic – is awful, in terms of what the holy book says."

But Shauna has a different take on "religiosity", one that is not linked directly to a "holy book":

"When I met him he told me he wanted to be a minister," she recalls. "How far he's come in 23 years! What I see is that Carl has traded belief in science for belief in religion. That's what I think. He still believes things that have no scientific basis, really, and yet he doesn't want to say that. Like cryonics, coming back from cryonics. He still has that same sense of wonder about science that he had about religion."

Nevertheless, she has been accommodating and generous in her support of Carl's cryonics work. She has attended several conferences with him and recently surprised him by taking out a cryonics policy for herself – as a Valentine's Day gift to her husband. "He wanted me to so much, and so Valentine's Day two years ago – you saw the 'charms' we collect? – well, I got him one that, its title is 'Together for all eternity', and I signed up… Personally, I think it's going to be an expensive funeral, but it made him happy." About possible contradictions between her religious beliefs and the process of cryopreservation, she takes on a dualist position: "I really think I'll be on to the next adventure and it won't affect anything. I don't think my soul is going to be trapped in the dewar."

Carl works with a number of major carriers which, though not always comfortable with the cryonics end of his insurance business, have respected the cryonics policies. He has also had experiences with carriers that have changed their mind or plainly refused the cryonics policies as business:

I was extremely candid with my main insurance carrier, that this policy is to fund cryonic suspension, and it took me a long time to get an approval letter on their corporate letterhead where it basically clarifies that in this case this old American insurance company was comfortable with cryonics organization, its owners and beneficiaries. I like the idea of transparency. That's why I was so shocked, so blind-sided when after 7 years of writing with the North American Insurance Company they suddenly had a corporate change, and not only said we are changing our policy and not accepting any cryonics policies, but we are sending back all the 23 policies you have in underwriting. And it was unconscionable, highly unprofessional.

What happened?

I put in a great deal of effort to get to the people who had made the decision and the highest I got was a guy who was the national sales director. He was basically saying, well, we had a corporate change and his rationale was that the re-insurers[62] were not comfortable with the cryonics business. But that's just silly. I had the documents: in the last few years we have almost 400 policy applications and we have 341 on the books with exactly zero death claims, so it's actually a very profitable business. So when I could actually document the fact that his objection was a non-issue he said, the bottom line is that we're just

[62] As a way of distributing risk, insurance companies farm their risk out to other companies, called re-insurers.

> not comfortable with it... So who made the decision? The larger context is that this is still very much a pioneering concept, the idea of cryonic is still controversial in many circles, especially religious circles, thought I can't document that this was a distaste religiously speaking for the concept of cryonics.

Explaining the distaste for cryonics through appeals to religious belief is common rhetoric in immortalist circles, not always supported by the facts. In some cases, religion may play a role – for example, I was told about (but could not verify) an article in an underwriting magazine in which an insurance agent objected to cryonics partly on religious grounds. Nevertheless, as I have shown, a great proportion of secular humanists and scientists oppose cryonics as well and amongst religiously inclined people, their religion or religious beliefs may not be the main cause of disquiet. The appeal to individual religiosity as an explanation simplifies the complex ways in which new categories of death and personhood enter into the network of institutions and norms, most of them secular, that constitute a life-death regime. Cryonics' position in the life insurance industry varies from carrier to carrier. In the first attempts to use life insurance for cryonics purposes in New York in the 1970s, insurers reneged on the policy once the case came due on the grounds that there was no "insurable interest".[63]

The concept of "insurable interest" in life insurance was legally instituted in order to make sure that owners of insurance policies – which do not have to be necessarily the person on whom the policy is taken out – or beneficiaries had a greater interest in the life than in the death

[63] Darwin, Mike. 1981. "An Interview with Curtis Henderson". *Cryonics*. July 1981. Also see "More on the Question of Insurable Interest", *Cryonics.* Issue 37. August 1983. Accessed on September 28, 2010 from http://www.alcor.org/cryonics/cryonics8308.txt

of the person on whose death the policy depended. Insurable interest protected people from being killed prematurely for financial gain, and it protected insurance company profits from policies that were knowingly taken out on people who, without the insurers knowledge, had a greater likelihood of dying (or even being killed) early (the classic case being alcoholics). In the early cases of cryonics, insurance companies seemed to have returned the premium without interest at the time of death, arguing that taking out a policy in order to suspend oneself does not qualify for writing an insurance policy and citing the relationship between a cryonics organization and a cryonics patient as "unorthodox". This was not merely an effort on the part of insurance carriers to 'get away' without paying the interest. Many insurers continue to reject policies *before* they are written based on these same grounds.[64] As Carl argued above (and as it has been argued elsewhere[65]) most cryonicists tend to outlive their terms, likely due to a concern with health and longevity, and thus constitute an ideal group for the life insurance business. Cryonicists have further argued that a person goes in to cryonics *because* he has a higher than usual interest in his or her own life.

So if policies are refused, it is likely due to the potential confusion they cause regarding interests and regarding categories of life and death. The judgment of a life's value in life insurance is a specifically secular calculus, in which lives are statistically and impersonally weighted based on aggregate categories and respective life expectancies, and then bought and sold based on a premium, on investments and interests. But insurable interest is ultimately a value judgment made by the carrier regarding the relationship between the dead and the

[64] For example, see message #24199 on the Cryonet listserv. Accessed from http://osdir.com/ml/culture.science.cryogenics/2004-06/msg00006.html

[65] For example see "Interview with cryonics funding specialists Rudi Hoffman" on the Depressed Metabolism blog, accessed on Sept 23, 2010, from http://www.depressedmetabolism.com/2009/10/10/interview-with-cryonics-funding-specialist-rudi-hoffman/

beneficiary of the dead, in this case either the insured or the cryonics organization or both. When companies argue that there is no insurable interest in a policy aimed at suspending oneself, they are judging that cryonicists and their organizations want the person's death more than they want the person's life. So they are assessing cryopreservation as its opposite, as something akin to suicide – a category for which policies are returned.

Cryonics, in other words, has jumbled the categories by changing the parameters of what can be read as life and what as death. Considering life insurance an invaluable tool for making cryonics affordable, cryonicists have adjusted to a host of life insurance-related problems – including protection from claims of next of kin – slowly and legally by using lawyers and demanding compliance from insurance companies through signed forms. Starting in the early 80s, lawyers for cryonics organizations began to draft forms to be submitted along with the policies to the carriers who would have to sign and commit to the terms. The first of such forms drafted by the Cryonics Institute in 1983 included the following items:

> (B) The company hereby recognizes that such a cryonics organization has an "insurable interest" in the life of the policyholder.
>
> (C) The company consequently waives the right to contest payment of the death-benefit of such a policy on the ground of "no insurable interest."

(D) The company similarly waives the right to contest payment of the death benefit of such a policy on the ground of the "unorthodox" nature of either the beneficiary/policyholder relationship, or both.[66]

There is no logical or medical argument presented here. Simply an agreement by contract to commit to the terms and pay the "death-benefit" when death takes place. Though cryonicists and the life insurance companies that accept these policies know they have radically different views of what constitutes death, that does not by necessity exclude a mutual transaction around life and death.

A similar entanglement concerns the realm of trusts. A cryopresvered person is classified as dead and therefore has no right to property. Any money or property previously owned by the person would have to devolve to others (since capital must be circulated in order to build value). But the person being preserved does not consider his or her cryopreserved body as irreversibly dead and also has hopes of being revived in the future, as the same person, and would rather not reappear in the world destitute. As a consequence, there has been an effort to find financial instruments that could serve this function. But it is not so easy for two reasons. First, in order to recirculate property and capital, trusts have traditionally been limited to a maximum of 120 years under a rule known as the Rule Against Perpetuities. Second, it is not clear legally or philosophically who would be revived and whether socially a person once declared dead by society could have their status reversed. The questions brought up by an attorney in an interview are typical of the sort raised by cryonicists thinking about such matters: "We think of cryogenics

[66] "More on the Question of Insurable Interest", *Cryonics.* Issue 37. August 1983. Accessed on September 28, 2010 from http://www.alcor.org/cryonics/cryonics8308.txt

[sic] as sort of a deep freeze, that an individual's body and mind come back intact, but the reality could be very different," says Thomas Katz, an estate planner at the law firm Katz Baskies, LLC, in Boca Raton, Fla. "For example, what if it's the same body, but there are no memories? Is that the same person? Or what if all the memories are intact in the very same brain, but you have a different body?"[67] Since the neo-liberal relaxations of financial regulations began in the 90s, several states have changed their term limits to long term trusts; Alaska, Delaware and South Dakota completely abolished the rule against perpetuities, whilst other states have extended the terms, with Wyoming and Utah permitting trusts of up to 1,000 years (Sitkoff and Schanzenbach 2008). States that have relaxed these terms have gained trust business (to the tune of $100 billion in gained assetts). Cryonicists have been amongst those who have taken advantage of the regulations, setting up perpetual trusts. But of course, cryonicists are only accountable for a tiny portion of the perpetual trust business. Though to my knowledge there has as yet not been a comprehensive study of these trusts, it would appear that many others place great faith in the long term survival of the United States and its financial institutions. Several private meetings have been organized by a wealthier subgroup of cryonicists who are trying to set up the legal and financial structures, sometimes off shore, to create secure personal trusts. The trusts outlive the persons as concrete, or at least financial, extensions of their desires and wills. I will later argue that these can be viewed as new forms of afterlife – that is as part of the overall history of the person in question beyond their physical presence. For now I will end this matter of trusts by remarking that to most of the membership, those who don't have considerable sums of money, financial trusts are not a great concern – being reanimated, they say, would be its own reward.

[67] "Frozen in Time: How Life Insurance Can Make You Immortal," Fox Business. Published June 30, 2010. Accessed on Sep 20, 2010 from http://www.foxbusiness.com/personal-finance/2010/06/30/frozen-time-life-insurance-make-immortal/

De-Animation Time

As soon as a member is in a state of critical care, he or she is placed on an emergency watch list. At any one time, Alcor or CI may have several patients on a watch list. When there is a prognosis of nearing death, the cryonics case starts in earnest, signalling the initiation of a set of procedures that have been put into place over time, that are still being developed, that are both experimental and disruptive. The process takes the cryonics patient and the cryonics team through a vast landscape of liminal nodes as they negotiate their way through established protocols, professional settings and networks, state codes and regulations, all designed to deal with death and the dead.

Using a case I observed, I will detail the process of deanimation and cryopreservation. My participation was limited to the actual perfusion and cryopreservation process at the cryonics facility. I was not present at the hospital setting, but was privvy to some of the reports that were coming in from the hospital as well as the debriefings and meetings following the case. Two things bear keeping in mind: though cryonicists may have contact with the patient or the patient's relatives, they cannot make any medical or other interventions on the person before the person is pronounced legally dead; cryonicists enter life-saving mode at exactly the time when the patient is declared legally dead.

Patient 33[68] was placed on life support at 11:54 on April 18 with a non-specific infection. The Cryonics Facility (CF) was notified and an emergency response team of local volunteers mobilised. The initial prognosis was poor. Death was expected soon. The CF immediately verified the patient's life insurance status, which was confirmed to be active. The team, in touch

[68] This patient number is fictional in order to protect the organization and the patient.

with the hospital staff, monitored the patient's status wondering how intensively they should mobilize. Two days later, the patient had been stabilised. Though he was still unconscious, the infection had been stopped and there was no heart attack. The response team and the CF went into 'stand down'.

As mentioned, the immediacy of intervention after the declaration of legal death is the most crucial aspect for the cryonics community. In ideal cases, a cryonics stand-by and transport team gets prepared, traveling to the location of the hospital with the appropriate gear, medicines and their specially-equipped van outside. Doctors, critical care units, hospice staff and nurses and whoever else is involved must be informed – in a delicate way – that there is a cryonics patient involved. They present all the paperwork – the notarized declarations, contracts, etc – to hospital staff so that at the time of death the body may be quickly given over to them. Some of the procedures are explained, in case death occurs suddenly and the only people present are the nurses, for example, who would be able to at least initiate some of the procedures. Aside from the hospital staff, cryonics stand-by teams often have to contend with family members who may be visiting or holding vigils. Ideally, if there are enough volunteers, there is at least one person from the team on watch at all times. But cases are long and unpredictable. Stand-bys can take many nights and days.

Emergency response requires 24 hour vigilance in order to be able to intervene immediately upon pronouncement, whenever it might occur. But death never comes in a controlled predictable manner; the patient's conditions go up and down, infections stop and start again, medications can have unpredictable effects. If the response team is made up of volunteers, the stand-by is taxing on personal lives; if it is a professional team such as that set up by SA, it can become expensive very quickly. In both cases it is a tense and stressful period of time. Stand

downs occur frequently, teams withdraw and, occasionally, get surprised by the sudden onset of death.

Local cryonics teams are largely volunteer-based. Suspended Animation, a for profit outfit created by cryonics veterans in Florida, has positioned itself as a specialized professional unit aiming to facilitate the crucial transitional period between pronouncement at the site of death and the cryopreservation at the Cryonics facility. However, recently they have been the subject of severe criticism by a nurse with the happy name of Melody Maxim, an ex-employee who has accused SA of unprofessionalism. She has argued that cryonics is at fault for not using professional nurses, perfusionists and surgeons in their procedures. Alcor does claim to use surgeons in their procedures, and they have done so, but it is not consistently the case. A California-based physician and researcher, attached to 21st Century Medicine, a research lab in California, does consult on the cases and gets involved with negotiations with the hospital and attending physicians, but he is rarely present on the case itself. CI has cryonics-friendly physicians, but doctors or surgeons are infrequently involved in the cryopreservation process. Melody Maxim's criticisms have been countered by the assertion that very few professional nurses or medics want to be hired by a cryonics outfit because it jeopardizes their careers. They fear that they will never get hired by anyone else afterwards. What's more, they say, cryonics procedures are specialized and at variance with traditional medical procedures. At any rate, there is usually an EMT or a nurse involved in the case. In the case I was on, a physician was in consultation, though not present at the hospital, and an ex-EMT worker was on the cryopreservation team at headquarters.

Every year, there are locally and nationally organized training sessions for emergency response teams at different levels of skill and intensity, sometimes led by certified EMT workers

connected to cryonics. As briefly described earlier, I participated in a basic one at Alcor headquarters during one of their annual meetings and was present at a California response team training later, where meds and protocols were reviewed by a team consisting mainly of veteran cryonicists. Developing proper protocols in the absence of direct medical research, institutional support and vast resources has been a priority for the cryonics community since the 1960s. In the introduction, I briefly outlined the first such effort in 1966 (the result of a collaboration between Robert Ettinger and Dante Brunol). The protocols were refined over the years through experience and by consulting relevant mainstream biomedical research, from resuscitation science to cryobiology to the effects of various pharmaceuticals. The questions the protocols address range from what medicines will prevent clotting in the blood after death? to how to present the cryonics procedures to hospital staff. Case notes are also kept and reviewed and the protocols are occasionally revised based on the introduction of new meds, new technologies or more efficient procedures. Though written manuals have been produced over the years[69] they are rarely consulted during the rush of an actual case.

Aside from the meds, a whole network of authorities and regulations must be negotiated. The period of waiting in the hospital for death to be pronounced is crucial. That is when a rapport with the staff and administration is established. If there is a bad rapport, it could lead to obstacles to a quick and efficient cryonics intervention. Cryonics teams have equipment and medicines that are used on the patient after death – these include a chest thumper to circulate blood and oxygen throughout the body in order to delay cell death, 'meds' that prevent further infections and the coagulation of blood, ice and an 'ice bath' in which the patient is transported out of the hospital. In a hospice setting, the conditions are easier. The administration is leaner;

[69] For example, see http://www.lifepact.com/mm/mrm001.htm (last accessed Nov 1, 2010)

the ideology of choice is paramount and so the patient's wishes are given priority; and the situation is geared towards guiding a patient to his or her death. Since they accept a patient as a dying customer, all the details are dealt with well beforehand. Hospices I spoke to may have had disagreements with the claims of cryonics, but nurses, doctors and administrators there prided themselves on accommodating the wishes of the dying patient. Sometimes there are PR matters, however, wherein the hospice is wary of letting everyone or anyone be "witness" to a cryonics case. In one case, a hospice I spoke to had asked the cryonics "van" to be parked at the back and the patient to be wheeled out from the back exit.

The hospital is a much more complicated setting for cryonics. In the first two to three decades of cryonics, hospitals were generally uncooperative and obstructionist, according to veteran cryonicists at Alcor. Hospitals would receive cryonics patients, with clear cryonics paper work, but would not alert the cryonics facility; or they would not let the stand-by team in; or they would block the necessary paperwork; or refuse to help with the necessary procedures and so on. Things slowly started to change in the 1990s. In part, this had to do with patient advocacy, and the rise of patient rights and the acceptance of patient choice as the proper ethical standard; in part, it had to do with the growing knowledge within the cryonics facilities about how to manage their relationship to the hospitals and present their case to the key personnel. A long time, active cryonicist, VJ summarized his more recent experiences in a hospital setting:

> When we're on a hospital case, ideally we'd want to get an empty room and set up all our equipment in an empty room, and our goal at that point is to be as unobtrusive as possible. And then once the patient is pronounced legally dead, then we become very intrusive. So before the patient dies we try to be as unobtrusive as possible. We hang around in the family waiting area. If we are

comfortable on the case, then we can hang around in the room. There was a case where we were on comfortable terms with the hospital. I was sitting in the room, on a 24 hour watch. If you are unobtrusive in the beginning, the nurses become comfortable with your presence and they let you sit in the room. In this one particular case one of the nurses spent a good 45 minutes talking through the procedures and talking about the philosophy and the morals and once that that nurse became comfortable with the idea of cryonics then everyone else followed in terms of accommodating our needs…Some people like to start the procedures in the hospital. I don't. In my opinion, you should get out of there as fast as possible. If something goes wrong, when you're in the hospital you're on someone else's turf. If something goes wrong – like you'd be in the hospital and you'd be starting to do procedures and the hospital administrator comes in and throws a shit fit, then the whole situation is fucked.

But presumably things would have already been cleared with admin.

No, not presumably. Because you're making the assumption that the hospital is one uniform entity. But the hospital is not one uniform entity. All of these things are renegotiated multiple times in the course of a standby. Because you have three shifts per day. And you have a nurse, a doctor, a charge nurse, hospital admins for different parts of the hospital. By the time you consider all the people who have a measure of authority you have a dozen fiefdoms that could potentially ruin your day. Let's say the head nurse, the charge nurse and

the doctor are all comfortable with this and then the case starts and a hospital administrator gets wind of it and decides for liability reasons to throw a hissy fit. So the hospital is not a single homogenous entity. You never know who's going to decide to throw a hissy fit. The procedure is not an unobtrusive event. For several reasons. One is that there's a lot going on. You have a recently dead person. You are doing a ton of procedures, you have a tub full of ice water. You have an air compressor, ventilators running. It's very loud.

But that's also the case for organ removal.

But cryonics is unusual. Before a case everyone in the hospital knows what's going on, and when the patient dies everyone wants to come and watch so all of a sudden you've got every nurse on the floor coming and sticking their head in. We have zero authority in that situation. And the patient is dead. Legally patients have a right to privacy, but when a patient is 'dead' there is no right to privacy, we have no mechanism for denying them access. Other than just asking, but they're all coming around sticking their head in the room, it's loud, there is a crowd, other patients there, it's not like the person quietly dies and we pat 'em on the head and everything is good. It's really messy, really noisy, people yelling all over the place. And then you have a crowd, of people that other patients are getting, so it can get chaotic. In my opinion get him out of there as soon as possible. The patient dies, dump ice on him, start doing ventilations, doing CPS, doing compressions, possibly on the thumper, push

the medications, to prevent ischemic damage, and get the fuck out of there. Because once you start the procedure there is no convenient time to start the transport."

Two weeks after the first alert, patient 33 was placed on stand-by again. Once more, the team was mobilized. A cryonics van was dispatched to the hospital. The patient was diagnosed with Multiply Resistant Staph Aureus, or MRSA, a highly contagious infection with no real cure. Treatment was stopped and the 70 year old man's siblings, who had power of attorney, decided to take him off medical support close to midnight. Death would be imminent.

When death does arrive, the stand-by team must rush in to carry out its protocols and prepare the body for eventual transport. But the point of death is also when the life-death regime's bureaucratic apparatus kicks in. In order for the transformation of life into death to go into effect, a series of actions, signatures and confirmations are required. The first is pronouncement, the initiating secular ritual signaling a key ontological transformation: a properly authorized expert must officially "pronounce" the person dead; who is thus authorized varies from state to state, ranging from hospice nurses to physicians. Then comes the death certificate, a form issued by the state, usually by the department of health, comprised of several segments pertaining to different authorities. The Certifying Physician must state the time, date, place and cause of death. The Medical Examiner must also sign the certificate to confirm the cause and manner of death, and in cases of suspicious death, to take over the medical investigation for legal purposes. Finally, the Mortuary or Funeral Home assigned to the task of disposition and transportation of the remains must also sign, on release of the body. Again, at what point in the process these signatures are officially required varies greatly. In some states,

such as Florida, the regulations are more lax, such that the deceased body can be released and transported without the physician's signature, as long as the physician has made a statement to the effect that he or she will sign later. In other states, such as Michigan, the regulations are stricter and even require an additional "Burial-Transit Permit", for "transportation and any manner of dispostion of a dead body including interment, storage and cremation".

The host of forms and regulations that determine who can pronounce death, who can handle the dead body, who can declare or question the cause of death, who can transport it, and *what* exactly may be transported, from where to where, and whose signatures are required – these are part of the background apparatus of biopolitics through which states manage foul play and suspicion, and gather information on causes of death. Usually taken care of by hospital and mortuary staff, or organ procurement agencies, these forms and regulations are at the forefront for any cryonics team. That most of the important forms cannot be signed until after death causes perpetual worry to cryonicists because they need to begin their procedures and the transport ASAP. Not permitted to intervene prior to death, cryonics stand-by teams feel a much greater urgency *after* a death has been legally declared, whilst for the medical profession, including the ME who must sign off on many forms, the point of death marks a release from urgency. For the latter, the dead cannot get deader. For cryonics teams, a person's life is about to be potentially saved.

A little after 6:15 a.m. Patient 33 de-animated, that is, he was pronounced dead by the head nurse, a status later to be certified by the physician. The hospital contacted the response team leader right away, telling him that they were following instructions as per prior arrangements and agreements: they applied ice around his head and body, administered two medications and were giving the patient chest compressions to circulate the meds as well as

oxygen through his body. From here, it would be a combination of emergency procedures and bureaucratic negotiations.

The team leader contacted headquarters and arrived in the room twenty minutes later to take over from the nurses. The ice bath would arrive soon after and the patient would be transferred to the ice bath, where a sump pump would circulate water around the body in order to make cooling more efficient. The ice bath has a chest thumper attached to it, but the team decided not to use it until they had reached the van – too much noise, too much attention. They couldn't leave though because they had to wait for the hospital release papers; the hospital, in touch with headquarters, was taking its time to pass the patient through their Organ Donor Network bureaucracy. The nurses continued to be very cooperative, though, helping with manual compressions on the patient.

The hospital release papers, with the approval of the Donor Network finally attached, were delivered by the hospital staff at about 8 a.m., about 2 hours after pronouncement. The patient's body was now officially in the care of the CF.

However, the body would have to be transported out of state to reach headquarters. Which presented another regulatory complication. In this particular state, like many other states, a corpse can only be taken across state lines by a licensed mortician. Thus, to keep a person not-dead, cryonicists must enlist the support and services of funeral homes.

The mortician prepared the paperwork and was arranging for transport when he recognized a problem. The body had been released but the death had not been certified yet by the attending physician, who had not been at the hospital at the time of death. The physician's certification is required on the form. And once that is obtained the form would have to be sent over for a signature from the Medical Examiner, and then filed with the state's office of vital

statistics which would then have to sign off on it – all of that before the body may be taken legally across state lines[70]. Both the mortuary and HQ tried to contact the attending physician. The attending physician had left instructions with his answering service not to be paged unless a hospital was calling. Now the team turned to the hospital, contacting the charge nurse who was cooperative. She finally located the doctor, faxed over the paperwork. The doctor signed and returned it. She then sent the paperwork over to the funeral director, who got the ME's signature. Leaving one last step, the deposition with the vital statistics office. By then it was 3 pm. The state office of Vital Statistics closes at 3 pm! There would be no cross-state transport today! Not only that, it was Friday. It would be three days before they could cross state lines with that body, that still-viable patient whose life was in their charge, three days before they could get it to the operating stage at HQ in order to perfuse it and take it all the way down to cold and still temperatures. How much damage would simple old ice prevent in the mean time? How much more dead would the person be? What could they do?

The body at this point is two classes of things: it is a dead body, commonly known as a corpse; it is also an assemblage of organs, a status that has been conferred because of the organ donation forms by which cryonics organizations facilitate their work. Two different sets of regulations apply to these two classes of things. Whilst a corpse may not be transported across state lines without the ME's authorization, body parts or anatomical donations, regulated separately as part of the UAGA, may. Organs do not require the same authorizations. One body, two laws.

[70] When bodies arrive by air at airports, they are marked as 'human remains', designated for pick up by a funeral director, who will have to sign the airbill and refile a disposition permit with the host state's vital records office.

At what point, less how many organs does a corpse cease to be a corpse? And when a head, say, is removed, which is the corpse, which the organ? These are not just silly questions. They address the contingent and normative ways in which these categories are applied. In this case, as it happens, patient 33 was a neuro patient, that is, he had signed up to only freeze his head. The rest of the body was to be cremated. Therein lay the solution. A man's head is considered an organ, though as far as the cryonicists and the patient were concerned, the man's head was the man's life, was the man himself, still holding a person, a future ahead of it. As a result the cryonics organization decided to carry out what it calls a "cephalic isolation" and thus later that evening the essence of the patient arrived legally at headquarters, where the cryonics team would work through the night to fully perfuse and cool the head down to LN2 temperatures and transfer it to a cryostat.

At any point during this process, the next of kin may contest, and often have contested, the cryonics agreement, producing a tension between the will of the deceased and the life of the living, between fate of the body and the fate of the money tied to it in trusts or life insurance funds. In this case, there would be no legal challenges from next of kin, who had been cooperative all the way. Patient 33 was safe, his head, his brain, his informatic self preserved under care.

Personhood vs Corpsehood

If for cryonicists the bodiless head of Patient 33 stored in LN2 is still a potential person, it is surely not because his spirit or soul has been saved. To the contrary, the fundamental distinction between *the living and the not-dead* is made entirely through the body – the body animate and the body in suspended animation. For the medico-legal regime, this is a frozen

organ, a *thing* separated from what was previously a corpse. Notice, however, that cryonics and the UDDA share the very same brain-centered view of personhood, and yet they come up with two separate fictions regarding its end. What can this schism, internal to the secular, tell us about the secular and secularism and about the body and mind caught in its midst?

Cryonics forces the question: What is left of Patient 33 in suspension? A frozen corpse? A potential life? Aspects of personal identity? Or just a thing? When I asked him, one of the people on the case asserted: "the person's identity is preserved in a retrievable fashion". Meaning that even when consciousness is suspended, aspects of personhood are still relevant, as long as they are imagined to be "retrievable". Retrievable identity here stands opposed to irreversible death. He elaborated:

> If a person is asleep they retain their personhood, if a person is in a coma they retain their personhood. But if a human is in a coma and has brain damage to the point where there is no hope of retrieving their identity then they are not a person. So to me the distinction between a person and a corpse is whether or not there is a reasonable hope of them regaining consciousness... The question is could this person be revived and become a conscious individual. If yes, then they retain their personhood.
>
> But even so it is still a particular kind of personhood since they are incapable of action…

There are lots of cases where someone has an altered personhood. For instance, someone who is insane – the courts will look at the person and say this person has a compromised personhood because of their mental condition and therefore we are taking away their personal freedom and their right to make decisions and we are giving that to someone else. Or a prisoner, someone who has committed some egregious crime and the courts as the arbiters of society say this person has committed this crime, lost their right to freedom and their decisions are being made for them.

So from that perspective, if we agree that society has created gradations of personhood… what kinds of things should accrue to a suspended person?

I would say that the rights of a person who is suspended would be analogous to someone who is the ward of someone else, like the child who is a ward of the state and the state makes decisions that are in the best interests of that person. So someone who is in cryonic suspension is unable to do very simple things, like vote, but there are still decisions that have to be made, but the person is incapable of making decisions. So the person is the ward of someone else who makes the decisions on their behalf in their best interest, and to the extent possible the decisions that that person would have made.

Many cryonicists would like to force the discussion on personhood, bring legal challenges regarding the rights of the suspended, but are also faced with the possibility that legal

challenges could backfire and perhaps create legal obstacles to the current practice – each obstacle of course being seen by cryonicists as a threat to life. Catherine Sullivan, a trained biologist and director of Suspended Animation, based near Boca Raton, Florida, feels caught between challenging the law and using it:

> They [the cryopreserved] are in stasis. They're not animated. I don't consider them dead. I treat them as a sick, unconscious person, very sick and very unconscious. As a doctor would a patient. They can't communicate with us but that doesn't mean they won't in the future. Once they're in storage they're like coma patients. I'm contemplating trying to open more discussions on how dead is dead. What if they're not dead? What if they've decided on their own personal definition, and you don't get to say. It's their body, their life and they've decided they're not actually dead and they want these things done and that is their *wish*. Well, we have this whole thing that says you can't commit suicide and you can't perform non-sanctioned procedures on people and I think that's a whole lot of hooeey. I understand that there is a reason why we have the laws we have and there might be a place for that… I don't think there will be a discussion until it's forced but nobody wants to be the client who forces that. There are people in this community who have been on the receiving end of the wrath of our traditional laws and communities and it can get really messy and screw up your life… people are afraid to start that discussion. At what level can you initiate that discussion? I can have discussions about it with scientists but on a removed level. How do you take that out there? So you have to ask specific questions from attorneys and hospital directors. So what is

it that you would need? Do we have to change the law or are there loopholes? Because medicine operates in all kinds of loopholes.

An older heart surgeon I spoke to began to look at both the legal and medical aspects of his own profession in a different way once he was introduced to cryonics by a group that was interested in his expertise. Though he wasn't going to sign up himself (when I spoke to him) and thought that it would still be some time in the future before proper preservation and revival might be possible, he suggested not only that preservation ought to be accepted as a medical procedure but also as a legal status. He went even further by suggesting that aspects of cryonics were already part of medical practice. People are taken into death and back every day in surgery, using some of the concepts (variability of death criteria) and procedures (cooling) familiar to cryonics:

> In Cardiopulmonary by-pass – the heart can be taken out completely, new heart sewn in and you live. And we can take people – it's done in heart surgery – and cool 'em down far enough so there's virtually no circulation, don't put them on a heart lung machine, open up their heart, fix it, warm it up and they're not dead. So the question is, 'Really, what is death?' Your heart's stopped, you have no circulation, no blood flow, but you're not dead, unless someone comes and says this guy's dead, and stops the procedure. *Then* you are dead. We say people are brain dead, though their heart is beating, just so we can take them to the operating room and explant organs. The heart is kept going just to perfuse the other organs. Then there's cellular death that comes, ultimate cellular death, and that to me is what death is. But we can't prove that clinically. We can't send the cells to the lab with a microscope and say ok this

> guy's dead. Now, you can have dead toes or gangrene on your arms, your arm dies, but *you're* not dead. Then there's the brain, but even with the brain we qualify it by saying 'he's brain dead' – we don't say the person's dead. We qualify the leg, by saying there is gangrene in the leg, which means *that's* dead. We don't say the guy's dead, when his brain is dead, we qualify it. You can't just go up and say this guy's dead, turn off the machine. There are protocols set up on how to do it.

What this surgeon was articulating was that death was being defined and normalized through procedures and rules (protocols), not through some essential notion of how to define and set criteria for a person's death. Thus, for him, the matter was not a clinical or medical one, so much as a legal and linguistic one:

> Physician-assisted *preservation*, not suicide. Because the guy is not dying, so it's not suicide. So if you change the concepts, you are not killing him, you are preserving him, you are preserving the cells. It all goes back to the patient's desire. We know we can keep this patient alive, but say the patient wants to die, the patient says I want to die. By refusing nutrition, life support, oxygenation, antibiotic surgery… are they not willing themselves to die, and by us not intervening are we not assisting in their death? Yes we are!? All this is legal stuff. It's phrasing. But I think you can say this person has elected to be preserved, just as this patient has elected to die. Well, why is it ok for one person to die and not for another to say hey I want to take advantage of the

> technology and be preserved? It's a legal matter. [With doctors] it will be accepted.

In short, the surgeon was recommending that "preservation" become a normalized cultural and legal status, a part of the current life-death regime.

The unspoken status in these discussions is corpse. To compare cryonics patients to people in a coma or deep sleep or heart surgery is to clearly make a distinction between the status of a cryonics patient and the status of a corpse, which is what the general public and law treat the cryonics patient as. For cryonicists, a person's identity, unlike a corpse's, is potentially retrievable. The problem is that unlike people in comas or in deep sleep, the "potential" has not yet been proven; that is, no one in a cryopreserved state has returned to life and thus there is an obvious empirical difference in the outcome between a cryonically suspended patient and others who temporarily lose consciousness. The potential is speculative.

As we saw, cryonicists have argued that socially, conceptually and legally we admit of partial persons: people with limited rights, people with limited functions, people who are wards of the state, or have given up their decisions to others. Thus, in practice, personhood has gradations. And here, regardless of the concept of personhood used to determine the criteria (autonomy, rationality, etc.), it is clear that law and society work with the idea of personhood as a social function. That is, *personhood* is at least in part a matter of whether society, or a group, treats an entity *as* a person, or to take it farther, treats them *as if* they were a person (vs *as if* they were dead). Personhood in this sense may be considered a *status* attributed to those who meet

criteria for *social membership* (Conklin and Morgan 1996).[71] This still leaves the question of whether, and under what conditions, an inanimate body, such as a cryopreserved patient, may come to be treated as a partial person. After all, even if the law and society admit of gradations in personhood, they don't treat corpses as any kind of person.

Or do they?

Here again the secular premises of the law come into play. As we saw, in the secular worldview, personhood and biological life are separated, yet signs of personhood must always be read materially, for now in the biology of the human body. But there is a particular aspect of this separation that makes it distinctly secular, in so far as it is revealed through the materiality of a body caught between rationalist and materialist determinations: in this body, the secular body, the separation of personhood and life can only be understood unidirectionally – that is, a body in which life and personhood are separable but only in such a way that *the body's life may outlast the person*, and not vice versa. *The person cannot outlast the body*. The body without the person is known as a corpse; and a corpse, not being or containing a person, is a thing.

In any continuum between person and thing, the corpse occupies a strange place. To begin with, there is an ontological problem, with the body having gone from an intentional subject to an inanimate one. The everyday course of things is to personify objects, whereas the corpse requires or even embodies the reverse operation. The person was a being with desires and

[71] If personhood is a status based at least partly on whether society, or a group, treats an entity *as if* they were a person, then one of the factors that influences such a social claim on the entity is the social intensity and depth of relationships which have accumulated around it, the internsity by which social identity is recognized. That is what may be called 'recognition'. This view also has its defendants in philosophy. In different ways Rom Harre (1981) and Peter Strawson (1959), for example, have argued that a first-person point of view or subjectivity is necessarily linked to recognizing and being recognized by others. Thus, an amnesiac with only momentary awareness of himself (ie with self-consciousness but not memory and therefore no real sense of autobiographical continuity) is viewed to be a person largely because he is recognized as such by others who treat him as the same person.

projections into the future, unable ever to be just what it is, in the way a thing is just what it is. Suddenly, now, the corpse is a human body that coincides with itself, that is its own image. One might say that the corpse is a kind of body, only more so. Its tautological nature is unintentionally captured in state definitions of corpses or remains in American law. For example, the Michigan Public Health Code (Act 368 of 1978 333.2803) defines the following: "(1) 'Dead body' means a human body or fetus, or a part of a dead human body or fetus, in a condition from which it may reasonably be concluded that death has occurred." Similarly, Arizona (ARS 32-1301 which establishes the Funeral board and its rules and ARS 36-325 which deals with Public safety) has this definition, using the term human remains rather than "dead body": "'Human remains' means a lifeless human body or parts of a human body that permit a reasonable inference that death occurred." The definition couldn't be any simpler: a dead body may be defined as a dead body.

An examination of the status of the corpse in law and society, helps us see how – through what rituals, codes, instruments, techniques – a person is socially transformed into a thing, if in fact a thing is what a dead person gets turned into. I will do this mainly by examining legal attempts in the US to define the corpse. Even as the corpse turns out to be a much more various and resistant cultural entity than secular concepts of death and legal clarity would outwardly claim, so the law itself, unlike its core assumptions and requirements, ends up being much more flexible and vague in practice, allowing room for ambiguous subjects and objects.

In a modern American setting, the act that simultaneously acknowledges and constitutes the change of status from person to corpse is the act of pronouncement. The authority to pronounce is given over to the medical establishment, though, as we've seen in the case studies, the details may vary from state to state. For example, in Arizona, where the Cryonics

organization Alcor Life Extension Foundation is based, a nurse practitioner as well as the attending physician may pronounce death, but only the physician may *sign* the death certificate. Pronouncement is a performance of modern institutional authority that with a simple gesture recodifies the body as a corpse. With one act – a nurse's phone call, a signature - all the rules pertaining to permissible procedures suddenly and radically change. It is the moment when the body is deemed no longer intentional, even *potentially* so. Hence the idea of irreversibility. At that moment, the body becomes objectified in the law. A cascade of new laws and rules – from inheritance and estate laws to rules regarding disposition – kick in and the reclassified body may be manipulated in ways that a living person cannot (Crippen & Whetstine 2007). Bodies may now be burned, they may be embalmed and displayed, or they may go to centers for scientific research, where they might end up in a car crash test or get plastified and displayed in a museum.

Amongst the operating principles of secular humanism and secular law is that humans possess their bodies and all of its parts in an absolute, inalienable way (Campbell 1992). Yet, this is contradicted by another set of principles, which would state that humans should not destroy their bodies or sell their body parts for valuable consideration or have judgments levied against them (Zee 2008). Thus, in secular law the *living* body is already a site of tension (pulled between personhood and thingness), for a person is said to fully possess his or her body and yet cannot do with it what s/he can do with other things s/he possesses. But what if the person is no longer there? When the person is not there to possess it, what is the body then? what "remains", of the body or of the person?

In the case of organ transplants, anthropologists have clearly detailed the ways in which body parts are commodified, by presenting organs as objects or mechanical devices *independent of the identity of the original owner* and by *managing anonymity* through the entire course of the

transplant chain. Personal identity is stripped from the body. Margaret Lock writes, "Only when corpses could be conceptualized as neutral biological objects, as part of nature and therefore autonomous and without cultural baggage, was it possible to divest them of social, moral and religious worth" (Lock 2002: 39)[72].

Rendering the corpse anonymous in the research and donation process means entering it into exchange outside of its own circuits of recognition, divorced from any specific history, identity or biography (Sharp 2001). In fact, it is precisely this anonymity that enables research[73]. When brain tissue is examined or a body is used in a car crash test, what is under study is not a particular person, but the abstract universality of the human body. In research, not only is the corpse's identity unnecessary, its individuality would in fact be counterproductive: what matters is how the individual translates into or represents the general human. In the case of crossing state lines, anonymity is also at stake. As we saw in the case of Patient 33, crossing state lines with parts of the body, unlike with a full corpse, is not a problem; it is not subject to the same regulations and does not elicit the same scrutiny. A full corpse requires a different set of

[72] However, it seems to me that such corpses do come *with* cultural baggage, but re-filled with a different set of social, moral or religious attributes. A different mode of stripping personhood is perfectly dramatized in the case of the Sabarl as described by Battaglia (1990). Upon the death of the person a set of mortuary engagements both build up and eliminate the memory of the person through the deployment and destruction of memory objects. Battaglia shows how the symbolic and practical elimination of the corpse is a necessary act of forgetting because the world of 'pervasive memory' which the Sabarl inhabit and in which the deceased person still remains embedded would prevent the Sabarl from moving on and contradict the fact of the person's absence. This ritual practice of forgetting runs counter to cultures of memorialization in which remembrance through the personification of objects is precisely what is valued.

Additionally, Lori Andrews (1986) has argued that allowing for the commodification of body parts will in fact reduce the objectification or dehumanization of the whole person. She claims that doctors share little information about the body parts and treat the parts as though they were more theirs than the person donating because the current system does not allow the person him or herself control over the 'marketing' process and decisions. That there is an actual market is in fact obscured by rules against commodification which only hide the market aspects of the trade.

[73] In an interview with an employee of the famous 'Body Worlds' company, responsible for the high-traffic exhibit of the same name, I was told that the first step in their body donation program is to cut off all connection to the family and to the history of that particular person as soon as the body is received. Once they are entered into the process of plastification the connection to identity is entirely severed. In some cases, donors have requested that their identity be revealed because "they want to be seen by a brother or son". But the company does not allow that.

procedures, presumably because it is thought to *embody a person* more completely than an organ, more than a head or a heart; a corpse retains a problematic residual personhood in the secular imagination.

If the erasure of recognition is a key factor in the stripping of personhood as status, what is left, according to the law, once personhood is removed? The answer is property, since one of the foundational aspects of modern Western law is the ontological separation between person and thing, or person and property, the "two great legal categories for imposing order on the animate and inanimate world" (Naffine 1999:104; Pottage 2004). The strict, modern distinction between property and person is not universal. Anthropological theories of personhood have analysed ways in which persons are partible and become fused with histories of objects through which social relations are established (Strathern 1988, Battaglia 1990, Lindenbaum 2008). Or take Roman Law which treated its categories more fluidly such that depending on circumstances the same individual could be a person or property. Grandparents, for example, were persons but also property in so far as they could be "inherited", which itself entailed a certain responsibility (Thomas 2004; Maine 1963: Chapter 4).

Admitting what was once a person into the category of property has caused some problems for Anglo-American law which has slipped the corpse back and forth in a hazy territory between person and property. On the one hand, the dead body, unlike a live one, may be possessed for purposes of disposition and use of body parts; on the other, unlike other properties that may be possessed, a dead body can not, in principle, be used in a commercial exchange (hence body and organ *donations* that in fact conceal the lucrative market world of organ transplantation*)*; dead bodies cannot be sold or even solicited for, say, by a funeral home. In the

Michigan code, for instance, (PA 2999 of 1980) solicitation for the purposes of obtaining a dead human body, before or after death, is punishable.

American law has tended to classify the corpse as "quasi-property" (Gilligan and Steuve 1995; Kester 2007) – a legal fiction made up by the courts to protect the survivors or next of kin without turning the corpse into a full property (Nwabueze 2002). The decision often quoted in this regard is a Rhode Island case dating back to 1872 (Pierce vs Proprietors of Swan Point Cemetery 10RI 227). The pertinent passage states: "Although as we have said the body is not property in the usually recognized sense of the word, yet we may consider it as a sort of quasi-property to which certain persons may have rights, as they have duties to perform towards it, arising out of our common humanity. But the person having charge of it cannot be considered as the owner of it in any sense whatever; he holds it only as a sacred trust for the benefit of all who may, from family or friendship, have an interest in it…"

The terms "common humanity" and "sacred trust" are invoked by a secular court to make the corpse something more than an object without turning it over to the realm of religion, a concession validating the investment of the corpse with significance beyond its material existence (sacred trust) but also claiming it for the realm of human affairs (persons who have an interest in it). Originally, common law saw absolutely no property in the dead body and the body was given up to god and the church. Physicians only prognosticated death, that is, detected signs of its onset, but were not charged with determining its arrival. Diagnosing and declaring death, pronouncing it, finding criteria for it – for most of Western history such things were non-medical functions that often fell to the family and religious authorities (Pernick 1988). As the church lost greater authority to state and professional institutions, especially in the domain of public health (Pernick 1988), it became necessary for the state to take over the dead body for purposes of

disposition with an eye towards protection of public health; yet, as grief and mourning were privatized (Walter 1991, Laderman 2003), it also became necessary to devolve some rights to next of kin. The only rights that could be so devolved were rights of "possession". Thus, the corpse became a body that must be gotten rid of, but with respect.

And in the end, these vestiges of respect don't last long either, as the quasi-property rights in a corpse are temporary. They are not property rights as such but custodial rights, valid only up to and for the purposes of disposition. After disposition, be it a burial or a gift to science, that so-called "sacred trust" evaporates. Thus, for example, in a 1973 case in Michigan (Rauhe v Langeland Chapel, 44 Mich App 371, 265 NW 2d 313), a mother with paramount rights over the disposition of the body donated it to science. During the transport to the medical facility the body was, apparently, lost. The mother sued but the courts held that she had no case as she had already given up custody at the moment she decided to donate to science. That was her choice of disposition. So much for sacred trust.

This in-between state of the corpse, its quasi-state, has left some indeterminate legal caveats. Not qualifying the corpse as property has implications. For example, the will as a legal instrument was designed for the lawful redistribution of the estate of the deceased according to his or her wishes. However, not being property, the person's dead body cannot be considered part of the estate, thereby raising the question of whether the disposition of remains may be specified by the deceased as part of his or her will. In the past, some courts have actually ruled against this: "It is quite well established ... that, in the absence of statutory provisions, there is no property in a dead body; that it is not part of the estate of the deceased person; and that a man cannot by will dispose of that which after his death will be his corpse." (Enos v. Snyder, 63 P. 170, 171 (Cal. 1900)) On the other hand, if the corpse were treated as property such that it could

be fully possessed by others, in whatever order of precedence, then the notion of the person's will would be dissolved. Quasi-property gives the law some wiggle room. The next of kin can take possession of a corpse, but at the same time an individual has a right to have his/her body (and assets) disposed of in the manner they wish. This has not solved the problem cleanly of course and there is little uniformity across the states on laws regarding bodily remains and wills (Kester 2007) - disputes regarding disposition come to court frequently, sometimes at great public cost, and disputes over the will itself and the estate, of course, are everyday matters.

What survives or remains of the person after death, then, is not regarded as merely a material body, a pure thing. In effect, something more than matter survives the death of the person. Apart from some notion of respect and sacred trust, there is the issue of the will as well; that is, of intentions that survive the intentional subject. In the US, a person is partly defined by his or her will when alive; by competence and autonomy to make decisions. If these are deemed to be lacking then usually the "will", that is the decision-making power, is given over to a surrogate of some sort, *but* without the person fully losing the status of personhood. So in such a case the living person is reduced to a quasi-person. This raises a question: if what remains of a person after death is not just a corpse but also decisions or desires in the form of a will or a trust, then could we surmise that the designation of a corpse as "quasi-property" may be hiding behind it a "quasi-person"?

Finally let me add that the corpse is not just one thing. As studies of organ donation make clear, the corpse does not stop its status transformations at the moment of death. Rather, it can be divided and subdivided, labeled and relabeled in different ways[74], all of which may have

[74] As Sharp (1995) shows, organs themselves have a further set of hierarchical categories: "organs fall into two categories. The first are the "quality of life" organs, which include the kidneys and pancreas. Dialysis and insulin therapies replace the functioning of these organs and can sustain patients almost indefinitely. The second are the

different consequences for people involved. Even in the matter of a full corpse, the law has made a clear effort to distinguish between a dead body and remains. In a grave robbery case, an Ohio court for example ruled that skeletons are not considered dead bodies. “A cadaver,” it noted, “is not an everlasting thing. After undergoing an undefined degree of decomposition, it ceases to be a dead body in the eyes of the law” (case in Gilligan and Steuve 1995). Similarly, the state of Arizona currently has two different definitions for ‘human remains’. The first, quoted earlier, is under the public health and safety act, whilst the second figures under Historic Preservation and reads as follows: "Human remains" means any remains of a human being who died more than fifty years before the remains are discovered” (ARS 41-865). Clearly, not all remains are created equal and in an individualistic society where generational continuity is not the norm, it seems reasonable that the law would find a distinction between newly deads and long deads, especially when it leads to profitable real estate developments over old cemetery grounds. In Australia there are further classifications, so that remains are considered ‘prehistoric’ if they are more than 200 years old. This turns them into fossils over which indigenous people can claim no jurisdiction. Not surprisingly, then, such definitions also delineate jurisdictions, they outline domains of authority over certain objects, rights and even people – both dead and alive. To the extent that persons are produced socially, their absence too is socially produced.

Personhood Done and Undone

The cultural and legal relationship to the corpse is fraught with difficulty because the transition from person to thing is full of contradictions. Though it doesn’t really advertise it, the

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"life saving" organs, including the heart, lungs, and liver. Patients who need these are in such ill health that they will soon die if they do not receive replacement organs.”

law does accommodate in-between stages, without really naming them. There is latitude and flexibility in both legal and cultural orientations towards life and death, as well as in cultural categories and attitudes. Neither legally nor anthropologically would anything seem apriori to prevent a conceptualization of cryopreservation as entailing some degree of personhood in so far as personhood may be considered a gradation of rights and interests – after all, even remains are invested with some interest and given some protection. These interests are not based on absolute or metaphysical qualities, but are determined in use, operating through particular networks of people, institutions, authorities, related concepts and practices, all of which help define their possibilities and limits.

Today's laws and the tensions they embody arose historically and were shaped through contests between ecclesiastical and secular law and priorities over control of the dead body (Nwabueze 2002). They are shaped by the materialist, immanant frame, that must hold that after death there can be no surviving person. In secular conceptions, there is a *necessary* erasure of personhood *after* death; "the dead" are denied a certain form of status. Yet, under the domain of the secular, legal (or other) protections *are given* the dead – his/her will is protected, the dignity of his/her dead body like his/her reputation is protected and so on. But such rights and interests are strictly divorced from the idea of personhood. The question is begged: if it is not to some version of personhood or a person's interests, to what is the protection accruing? Sometimes the laws regarding the dead are given in such a way as to protect the "survivors" (a sort of admission to the effects of "relational personhood"), but not always. The law talks about the inherent dignity of the dead and respect for the dead body. This places secular law's relation to death, the dead body and personhood in an unresolved tension

But conflict and ambiguity are not always a recipe for conflict. They can also present an opportunity for negotiation. Cryonics has managed to understand and operate within these systemic ambiguities, both revealed and caused by its own divergent premises. Below the loud, overarching discourses over brain death or abortion pitting religion against secularism, the instability of the category of personhood, the lack of clarity about where it might begin or end, the availability of alternative properties attached to the concept person and the plurality of criteria used to determine it, often leads to 'occasions of negotiation' rather than conflict. Anthropologists have shown this to be the case in hospital settings where families, doctors, nurses, and ethicists enter into a set of discussions amongst themselves through which they come to agree on when to cease life support, for example (Conklin and Morgan 1996). Indeed, Kaufman even argues that families of PVS patients contest official claims over the determination of death as a way of gaining control over the process (Kaufman 2000). In other words, the ambiguity is precisely what allows the process to be a social one. That is what I have considered in detail in this chapter, the ways in which the category of 'personhood' is regulated and disciplined, made up and undone, under multiple domains and authorities.

Chapter 3
Secular Immortal:
Temporalities of the Afterlife

In 2008, the Immortality Institute initiated an on-line discussion for its members entitled "Should we rename the Immortality Institute?" The final goal was to vote on a name change specifically aimed at eliminating or keeping the word "immortality". On the one hand, use of the word connected the project to an ancient human dream, while making a bold statement in the cautious world of science that this is not about tacking on a few paltry years, as gerontologists would want to have it, but about agelessness, about thousands more years of life. On the other hand, connected as it was to an ancient human dream, the term also evoked religion and its age-old, scientifically untenable promises of existence after death and what was called "all that mystical stuff". It was a secular bind: what was being sought was immortality in a physical sense, that is, within the accepted parameters of a materialist scientific understanding, yet the concept itself, in a secular frame, seemed to float outside of acceptable scientific parameters, indicating claims and possibilities that seemed to have become irrevocably bound up with that thing called religion. Immortality was at once beyond science and beneath it.

The discussion had been brewing for several years. The advantages and disadvantages of a name change had been discussed internally and occasionally on public web forums since the founding of the Institute. An official members' thread dedicated to the theme started in 2006 and would again flare up in 2009. Indeed, the use of the word "immortal" has been an on-going source of controversy from the beginning of cryonics in the 60s, according to those involved. Upon its founding, Alcor decided very consciously to forego reference to immortality and attach the term "Life Extension" to its official title: The Alcor Life Extension Foundation. Other groups

called themselves by such names as CryoVita and Transtime, focusing on concepts of life and time. Nevetheless, terms like immortality research, immortality science or physical immortality were commonly used, as exemplified by the Immortalist Society and their publication The Immortalist. At first, with the groups being small and on the fringes of wide public attention, claiming the term immortality seemed to be a benefit at best, and at worst, simply a casual and accessible handle for the idea without the introduction of complicated and lengthy terminology. It was a word that seemed naturally associated with the project of defeating death and extending life. Besides, the book credited for founding the cryonics movement wore the word on its sleeve with pride: Dr Robert Ettinger's *The Prospect of Immortality*. Similarly, some older books on cryonics and more radical forms of long-term survival referred freely to "immortality". In 1969, the writer Alan Harrington published a popular book of polemics called *The Immortalist*, making an unabashed and defiant case for the use of the word because, he argued, the true goal at this point in human history is to transcend our biological limitations, of which death is the ultimate one, in order to preserve human consciousness – this goal and final purpose of defeating death can comfortably be termed an immortalist project, he argued. Later, *The First Immortal* by James Halperin became a successful sci-fi novel featuring cryonic suspension and reanimation in the future, which gained an enthusiastic and reverent fan base in the cryonics and life extension communities. In fact, a number of interviewees claimed that *The First Immortal* either introduced them to the concepts behind cryonics or influenced their decision to sign up with a cryonics organization.

As a result of the internet and technology boom, and the sudden surge of optimism due to biotech promises, a small flurry of activity in self-publishing took place in the 1990s, with a number of books using immortality in their titles. These included a range of approaches to the

topic: *Becoming Immortal* from 1995 by Wesley du Charme, PhD, presented an overview from the perspective of nanotechnology with techniques that would make reanimation from cryonics viable, cellular repair technologies a reality and the future world a place of expanding intelligence and cheaper and better production for the basic goods of housing, clothing, food, and habitat, including colonies in outer space; *Immortality: How Science is Extending Your Lifespan and changing the World* from 1998 by Dr Ben Bova focused mainly on medical techniques and dietary regimens that have been extending life in modern times; and in the same year Frank Tipler's *The Physics of Immortality* presented a discussion in theoretical physics making an information-based argument about the physical resurrection of all existing things in infinite universes.

But as public exposure grew in the new millennium, so did self-consciousness about the public terms by which the various groups would be known. Immortalist communities were receiving more serious attention and thus had to think about the public face of their projects much more strategically. Their claims were beginning to make headlines in more serious places than the "weird news" columns. They had always been aware of the stigma around their claims and their visions. With the opportunity to be more credible and public, a new approach seemed necessary. Public Relations became a major focus as media and outside authors began to write about some of these issues in the late 1990s, frequently using the term as a sensational titling strategy (eg Hall's *Merchants of Immortality* (2003)). In response, it seemed that books and discussions from within the immortalist groups began to consciously avoid the word. The Immortality Institute's collection of essays, for example, was called *The Scientific Conquest of Death: Essays on Infinite Lifespans*. Aubrey de Grey's seminal project opted for the unpalatable title of Strategies for Engineered Negligible Senescence or SENS. In many discussions and

meetings, I heard "immortality" referred to only half-jokingly as the 'I' word – the word that could not be spoken to the outside world.

At the Immortality Institute, Bruce Klein, founder and still the director at the time, and a man very much concerned with PR, worried about the organization's name, even though he himself had created and baptized the organization. But it had since grown from a small initiative in Birmingham, Alabama to a large, active forum with book and film projects, conferences and research sponsorship. Klein's worry at the time reflected a cross-section of concerns from the membership, which I had heard also from a number of people involved in various RLE communities.

The word "immortality" faced three objections. The first was "the religious problem": the word brought up all the religious connotations the very secular and atheist Immortalist community was trying to stay away from; it scared away mainstream folks, made the serious scientists snicker, and instead attracted the kinds of people that life extension advocates regularly refer to as "the mystical types". Because immortalist communities want to claim that their project is scientific and materialist, and not dependent on non-material entities and imagined worlds, this "religious" line is the main line they draw to separate their projects from immortality projects that have come before.

Second was "the accuracy problem": the term, they claimed, lacked descriptive accuracy when unqualified. That is to say, absolute immortality in the strict sense may be impossible, as everything is potentially subject to death or destruction. Some modifiers were suggested such as "possible immortality" or "physical immortality". A hardcore group, however, insisted that no information in the universe is totally destroyed and so under the proper conditions we could,

indeed, be immortal in this very strict sense. The issue was simply one of proper storage and retrieval.

The third was "the credibility problem": the word jeopardised the credibility of the immortalist project in several ways aside from its association with religion [ie. 1] and its inaccuracy [ie. 2], as described above. Other related problems were its association with generally "kooky", "sci-fi", "cultish" and "far-out" positions; and the term's appropriation by what was casually referred to as the "snake oil" vendors putting out anti-aging products with questionable claims about longevity and health.

The Immortality Institute's on-line poll and discussion on a name change offered numerous alternatives – in fact, a total of over 220 alternative names were proposed, amongst which Institute for Unlimited Lifespans was the most popular. In the end, though, none seemed to win the day over "immortality". The members voted to retain the name Immortality Institute, but added a subtitle "Advocacy and Research for Unlimited Lifespans".

There were certainly practical issues involved in changing or not changing the name – paperwork, web-site management, etc. – but at the time the general consensus seemed to be that "immortality works fine". It defined a broad enough concern inclusive of people who were not only focused on a biological approach to immortality but also on an informational one. Equally importantly, the director, who goes by the handle "Mind", explained to me, the sense was that Immortality Institute had already "staked out a spot in the memespace" – referring to Richard Dawkins' term, memes, proposed as the cultural equivalent of genes, recognizable, self-propagating concepts or terms that survive and multiply through usage. Immortality and The Immortality Institute, in other words, were already on people's tongues, as well as in the search engines. "Mind" emphasized, "we own 'immortality' on Google". It is the first link that shows

up on a search. Who could ask for more? “Immortality” survived the vote – at least for another year when the debate was initiated once again. Eventually the on-line forum changed its website name to “Longecity”.

A number of testimonies, both on-line and in face to face interviews, show that the third objection is based on real, practical impediments encountered by people involved in the immortalist project. Many members were reluctant in their personal and professional lives to associate themselves with the term because of a real fear of outside stigma and ostracism, even in scientific or secular settings. One member said, “I don't mention the word immortality around my family or on TV...” Another testified, “I'm never stupid enough to use the world ‘immortality’ about anything I do. I prefer not to be seen as a certified wacko.” These were typical accounts and the apprehension is by and large justified, as the two following stories show:

> When I mention the name Immortality Institute to my friends (people who are computer science or biotech majors ... who are really interested in life extension and science) they get turned off immediately because they think it’s some sort of new age group, or a cult, or a pseudoscience group.

> I have only mentioned the Institute on one occasion to my colleagues. My colleagues are well-published and recognized in the field of aging. Let's use Ass/Prof. G.L. as an example. He has published a book [on the medicine of aging] as well as having close to 100 published papers to his name. Before I could even explain what the mission was, the room was full of laughter. I won't be doing that again in a hurry.

The overall sense was that "immortal" was a catchall, recognizable term, but with the disadvantage of inviting ridicule or scaring people away. Scientists and regular people were much more open to other terms such as "negligible senescence", "longevity science", "anti-aging research" or "life extension". The sentiments of one member echoes a general point of view: "I wouldn't go out and wave the flag in my local town for Immortalism, purely because I'd become a laughing stock of the community. Living a healthier, longer life, however, is something I could promote and encourage without fear of ridicule, however narrow minded such ridicule would be."

That actually is just why those who advocate for the use of the term immortal or immortalist strike a defiant note, wanting to reclaim the word, reappropriate it.

As for the second objection, inaccuracy, the general public and the media find 'immortality' a convenient way of referring to the project of extending human lives, likely without being too concerned about the strict accuracy of the term. Aubrey de Grey, director of SENS, a cryonicist and anti-aging activist, made the point in a discussion group. Referring to a segment on life extension in the TV news show *60 Minutes*, he noted that even as he and groups like Alcor explicitly define their work as anti-aging or healthy life extension, interviewers and broadcasters ignore the terms and keep referring to their work in terms of "immortality".

It seems generally understood that the strict definition of immortality is not necessary for the word to work. The strict definition of an immortal is a being not subject to death at all – here is Merriam Webster dictionary's concise and apt wording: "exempt from death". As the first line of the famous syllogism has it, "All men are mortal", which means that all men are subject to death at some point and therefore by definition not immortal. By some cosmic oversight, we were

dropped from the list of the exempted. The search for immortality is an attempt to regain the state of exemption.

But the exclusive link between death exemption and immortality is recent and not quite accurate. Death was not always understood as an obstacle to immortality. It is true that in the tradition coming down from the Greeks, one acceptable way of defining immortality has been to claim it as the attribute of the Gods who simply do not expire, even though they do – in a proto-transhumanist manner – change form and status in all sorts of other ways while maintaining their continuity of identity throughout. Zeus cannot die; and Zeus as Swan is still Zeus. In the same tradition, humans were clearly understood to be subject to death; death was the end of their life amongst mortals. Yet death was not the end of their personal existence. Their personal identity continued, now uninspired and bored, in the darkness of the underworld. *Their personal existence was indefinite, despite the physical transformation they called death*. How otherwise would Orpheus have sought, found and held for that exquisite moment Persephone's hand as they almost emerged from the depths? In many other traditions, death was actually a necessary condition for immortality. You had to die, and even die in specifically prescribed ways, in order to become immortal. Egyptian pharaohs and Christian martyrs are only two examples (Segal 2004).

In usage, too, the term carries a somewhat broader meaning that does not entail an absolute exemption from death. Indeed, any kind of afterlife, to which death is a necessary precondition, is generally considered a form of immortality, especially in secular contexts. The survival of a name or reputation across generations (Wordsworth has achieved immortality), especially for good deeds or achievements, is frequently counted as a sort of immortality. Immortality through deeds was also a Greek ideal, which according to Arendt (1958/1998), constituted a key feature

of the public or political sphere. Finally, in a weak sense, any significant extension of the life span is also loosely interpreted to fit the category: from the point of view of our 77 year life expectancy, a two hundred year human life is tantamount to immortality. When you have people like Aubrey de Grey and his Methuselah foundation predicting 5,000 year lives in the foreseeable future, immortality does not appear as such an inappropriate term. The second objection – inaccuracy – seems therefore to be itself inaccurate or at best unsubstantial.

Ultimately, it is the first objection, the link between immortality and religion, that has motivated debate in immortalist circles. It was this link that explicitly moved another group to initiate a name change vote. In July 2006, at the same time that the Immortality Institute started its on-line forums on the topic, the non-profit Immortalist Society, a close collaborator of the Cryonics Institute formed in the 1970s, wrote to their members asking them to vote on a name change.

What compelled the Directors, after over 30 years, to contemplate a name change? As they explained it: "the word 'Immortalist' has *too many religious* connotations [a few are acceptable?] and is a public relations liability." [75]

In the event, the necessary two-thirds majority required for the name change did not materialize. Instead, the Directors, "after extensive arguing", agreed to at least change the name of their publication, *The Immortalist*. In the first issue of the magazine now called *Long Life*, the Directors wrote:

> Yes, the magazine you are looking at was formerly called THE IMMORTALIST. The necessary two-thirds majority of voting I.S. members required to change the name of the Immortalist Society was not achieved. But

[75] The Immortalist, July 2006, http://www.cryonics.org/immortalist/july06/news.htm (last visited July 11, 2009)

after very extensive arguing the I.S. Directors agreed on the magazine name change.[76]

At the same time, because of wider public exposure there have been attempts in recent years to reconcile the immortalist project with religious projects. For example, the Alcor Life Extension website has a prominent link on its home page entitled "Cryonics and Religion", in which the language of religious sanctity of life is used in justification of the project from a religious perspective: "Cryonics is an attempt to preserve and protect the gift of human life."[77] Nothing in the bible specifically refers to cryopreservation, so the issue turns on the idea of the soul. Several documents issued by Alcor that try to reconcile cryonics and religion focus on the idea of the soul, claiming that if suspension "works" then the interval between cryostasis and reanimation should be thought of as something like a coma during which the soul remains in place; if it turns out that reanimation does not work, then the person was dead from the time of cryopreservation so that their soul would have gone to that place where souls are meant to go and the body could be considered as having been merely stored or disposed of in a particular way. The arguments basically hold that the practices of one do not contradict the tenets of the other. That the practices may themselves be in conflict is not considered problematic. Acceptable practices are subject to change, of course. Cremation, long categorized as an undesirable pagan practice, became an accepted Catholic procedure when the Vatican lifted the ban in 1963. In fact, I was told that in 1968 a Catholic priest in NY apparently blessed a Cryocapsule. Regardless of

[76] The Immortalist, November 2006, http://www.cryonics.org/immortalist/november06/news.htm (last visited July 11, 2009)
[77] http://www.alcor.org/ (last accessed Sep 15, 2009)

the arguments, if enough figures of authority in any institution incorporate the practices – ie more priests blessing cryocapsules – then the practices will adjust accordingly.

On the other side, religious institutions have taken notice of biotech advances and bioethical debates over life extension. Recently, the Diocese of Pistoia in Italy organized a week of theological reflection on "The Idea of Immortality on Earth". Several transhumanists, including James Hughes, director of the WTA, wrote in support of the seminar. Max More, a key transhumanist figure and philosopher recenty appointed the CEO of Alcor, presented a text that was read out at the seminar.[78] However, the decision to approve of the Diocese's seminar was not smoothly accepted by all, with both More and Hughes receiving sarcastic resposts from the transhumanist and cryonics communities. The gist of these reconciliatory efforts has been to invite the religious believer to accept immortalist practices and ignore the fact that, irrespective of the rhetoric on the websites, its actual practitioners, immortalists, are by and large opposed to religion, deny the existence of god and do not accept the forms of immortality posited by religious beliefs. They are inviting religious believers into their community on logical grounds, ignoring that the community itself is hostile to their religious identity, beliefs and practices. What bears mention is that the concept of immortality – its parameters, its link to other concepts and practices – is to some extent being reshaped by the very debates themselves and by the uses of the term in those debates. Immortality is not entirely fixed or stable as a concept nor as a set of practices, but subject to alteration in context. And the immortalist debates are altering the term and the context.

[78] He casts Immortalism as a fight against aging, arguing that sensescence has no moral value attached to it in scripture and that an extended life could only be better for the contemplation of God – an old utopian argument. The English text may currently be found on Max Moore's blog: http://strategicphilosophy.blogspot.com/2009/09/why-catholics-should-support.html (Last accessed September 15, 2009)

The problem over "immortality" as a term becomes acute when the word immortality entered the non-religious domain. That is, used within the confines of a religious domain, to which immortality is bound, it elicits no real controversy. But imported into a scientific and secular setting, immortality immediately gets transformed into a suspect category – even to immortalists themselves. The opposition between Immortalism and religion may be a current social fact because of a particular history that has pitted science and materialism against religious authority and claims about the soul. Shuttled back and forth between the domains of religion and secularism, concepts like the afterlife and immortality are part of the contest of power and authority between the institutions and authorities of the respective domains. Anything to do with extensions of self or personhood beyond death, any concept or action or belief that circles close to immortality or the afterlife, gets caught up in the secular-religious divide over beliefs.

Because, as I argued in the introduction, in a secular frame the body can outlive the person, but not vice versa, notions of continuity and survival can lead to problems and inconsistencies when they enter social life and discourse. Immortality becomes bound up with the afterlife. Physical immortality gets entangled with resurrection. The self tries to survive the body without becoming the religious soul. This in part explains why the various immortalist groups have consistently been regarded as religious or quasi-religious.

Part of the problem stems from the secular conflation of a range of concepts – death, soul, the afterlife, immortality, which entail very different practices and experiences – into the same grab bag of religion. And so these concepts also get tied to belief. Immortality and the afterlife are not considered independent of their connection to belief in gods or spirits. Yet, belief in an afterlife and belief in a transcendent god are not in fact linked by necessity. For example, in Japan, large cross-sections of the population seem to believe in an afterlife without accepting the

existence of a transcendent deity (Lock 2002); in the US, many who do not believe in the existence of god and many others who do not identify with a particular religion nevertheless believe in an afterlife, particularly a paradisiacal world beyond this one (Gallup). Platonic arguments about the existence and the immortality of the soul were not 'religious' arguments in so far as they did not depend on deities or spirits, though they did posit a world of ideals. Nor does every single set of practices and beliefs that have been categorized under the label of religion seem to have, or place much emphasis on, afterlife belief systems. The most common examples are forms of Judaism and Confucianism (Segal 2004), but there are also some non-monotheistic hunter-gatherers who tend to dispense with the usual hullbaloo over burial rites as well as beliefs in continuity of the person after death (Woodburn 1982). Even where there was a structure of judgment after death, the assessment did not necessarily involve a specific deity, as can be seen in the principles of *karma* in Hinduism or their equivalents in Gnosticism brain or Orphism (Brandon 1967). In other words, the links between afterlife beliefs and religiosity or theistic beliefs are neither universal nor necessary.

At the same time, as I've argued, there are clear and significant ways in which aspects of a person seem to be continued as part of social life after the person's death. A person's will and reputation, their legacies, works, and even possessions are all such aspects – aspects that the person along with others considered integral parts of their personhood and their personal identity. Viewing these as extensions of personhood, or as extensions of a person after death, does not fit secular modern notions of personhood or agency. The fact that afterlife beliefs and religion have been yoked though they do not harbor any necessary connection, whilst at the same time secular continuities of identity and personhood are explicitly separated from religion, only seems to

emphasise the claim that the category of religion itself is problematic, as it seems to be cut up in arbitrary ways to fit various assumptions or agendas (Asad 1993).

The focus on belief, and the obligatory categorization of certain generalized beliefs as religious, blind us to the way that discourses and practices determine actual lives and shape experience. Immortality, rather than being considered in terms of a set of practices and ideas constitutive of experience, has been dismissed in contemporary analysis because the focus has been on the truth or falsity of beliefs and the otherworldly. The afterlife is in secular terms an impossibile formulation. These approaches may be anthropologically counterproductive as actual experiences, expectations and practices are lost from sight.

Tony Walter's (2005) work on *deathwork* is a useful counter-example. He outlines a number of ways in which contact and influence between "the world of the living and the world of the dead" are maintained within a secular frame, including the army of counselors and psychologists administering to mourners after a death, as well as networks of organ procurers and recipients, coroners and medical examiners, lawyers, pathologists and even police officers and spiritualist mediums. These specialists, Walter suggests, are mobilized as mediums, to "mediate" between the living and the dead, an activity opposed to both the dogmas of the reformed church and of secularism, for which there is nothing after death to mediate with (Walter 2005:406). Contrary to the common assertion that "the western mourner has little to do but feel the grief and reconstruct a life without the dead" and that "the dead are cut off from the living, with no traffic between the two worlds", there is "considerable traffic, and several professions make a living out of directing the traffic, or perhaps more accurately, as messengers or telephonists, bringing information from the dead to the living" (Walter 2005:407). In fact, Walter argues, these specializations may have arisen precisely as a response to the structural

separation of the living and the dead in a modernized, urban setting, where most dying takes place away from home and in hospitals. A key outcome of the work of these mediators – including pathologists and coroners, as well as obituarists, clergy and therapists – is a public, publicized "story" that "validates the deceased's life and its meaning".

Although his vocabulary of "contact" between the dead and the living is counterproductive, Walter's account of death mediation in secular systems shows that more work is needed in developing concepts and vocabularies that make sense of the effects of a person's end, both for the person as he or she leads up to that end, and for the rest of society which continues to experience the influence of that person, both through bodily aspects such as organs, and non-bodily aspects such as wills and memories. For example, to expand these terms beyond the secularly determined limits, one migh think of *after*life as whatever aspects of the person survive after the end of biologically-intergated life, including wills, reputations, works, objects, pictures, organs…

For the present case, I find it useful to focus on *expectations* produced by various modes of the afterlife and their practices. By focusing on expectations, I think we can fruitfully analyse afterlife and immortality in terms of temporality, as varying modes of extending time in response to contractions of time, as ways of ordering and structuring futures, structuring life experiences in relation to endings, both personal and collective. In the secular age, that means relationships to both the finality of death and to a range of catastrophic end-time scenarios.

Death Itself

Whilst subscribed to and argued for by the likes of David Hume, the materialist doctrine, broadly speaking, had its strongest foothold in the French enlightenment and the coterie of

philosophers, mathematicians and writers revolving around Diderot and his *Encyclopedie* project, culminating in the most renowned early materialist exposition *Systeme de la Nature,* written by Baron d'Holbach (2005 [1771]), a friend of both Diderot's and Hume's. What came to be known as French Materialism was driven by two goals. The first was to attempt to explain the world based on simple materialist premises of sense perception and cause and effect; the second, equally important and overtly political motivation, was to refute religious doctrines as such, in particular the existence of god and an immaterial soul, and by extension its immortality. This latter agenda itself shaped the kind of arguments that materialism would put out. In other words, it was not only a matter of presenting a materialist argument about the composition of the world; but also of preparing that materialism to effectively counter some of the doctrines posited by religion and "spiritualism", including of the Cartesian sort, which separated mind from its material basis.

Materialism was reconfiguring the figure of man, both in its own image and against an image it held of religion, specifically that part of religion it saw as being dependent on non-material entities. To the question, what is man, D'Holbach wrote: "We say, he is a material being, organized after a peculiar manner; conformed to a certain mode of thinking--of feeling; capable of modification in certain modes peculiar to himself--to his organization-- to that particular combination of matter which is found assembled in him." The conception of humans as a particular arrangement of matter, familiar to and cherished by immortalists and mind-uploaders today, was a radical concept standing against Cartesian dualism as well as religious ensoulment, which are not so far removed from each other. What is important here is that D'Holbach's formulation of materialism was based on a *theological* question about "man". Of utmost importance was to emphasise that man was, unlike religious views of him, sufficiently

describable internally, according to the "matter which is found assembled in him". That idea was guarded heavily, even against non-theological dualists, for fear that any concession might lead, not to some alternative account of humans and the world, but back to religion.

The book's influence in America was significant. It was reprinted and retranslated extensively, influencing the circle around Jefferson and Barlow (Richardson 2005). In reaction to the spread of materialism in the US, and particularly to what it meant regarding the soul, anti-materialist and millenerian tracts proliferated through the 19th century, including during what historians of American religion call the 2nd and 3rd great awakenings. Materialism was commonly presented as a threat, a prelude to total moral dissolution, a French corruption that could only be countered by re-emphasising the immortality of the soul. For example, in *Immortality of the Soul and Destiny of the Wicked (2005/1871),* Reverend N. Rice attacks materialism as a French invention and the greatest evil to have been thought up. "In making man a mere material organism and denying his free agency, they furnish the best apology for all wickedness; and in making the only penalty of sin the privation of conscious existence, they take away one of the most powerful motives by which it is restrained." The argument was common that sin afflicted every individual and could only be battled with help from theology and the church. The church and its discipline prepared the individual for a proper life and immortality was a promise delivered upon the completion of a good Christian life. Without that threat and promise, humans would turn to the wickedness inherent to this world.

If we bracket belief, the debates about morality with or without an afterlife can be more easily seen as a contest over the formation of subjects by particular authoritative temporal orderings. Secularism and materialism did not only recast matter; they reorganized the present in relation to a different kind of future, a different kind of promise.

Regarding death, the naturalist or materialist view clearly was not the only one, nor the predominant one. Nevertheless, between the end of the 18th century and the end of the 19th century, a growing number of people in Western Europe and in North America came to live with the understanding that both their lives and their selves could or would come to an absolute end with their death (Sloane 1991, Aries 1975). Narratives of people who have "lost" their faith or have been "purged" of it through secular proselytization proliferated, emphasizing, amongst other things, the effect of this orientation on questions of life and death. Mathew Arnold, British poet and, importantly, school master, said of his own teachers that they "purged my faith" and one result was a new relationship to living and dying: "What doest thou in this living tomb?" he queried of humanity, signaling a moment when living in the face of the finality of death was suddenly being experienced as living in a tomb, the person – the thou – trapped in the living tomb of the body. Similarly, Wordsworth, in one of the first secular explorations of memory, nationality and personal identity, "The Prelude", laments that all we're doing here on earth is "unprofitably traveling toward the grave". The possibility that there was no afterlife became, if not a certainty, at least a definite consideration that in itself began to shape a particular orientation towards life. Life itself was being imagined now as a long death, a living towards dying.

The only figures for attitudes towards an afterlife dating back to the turn of the century come from the work of an American psychology professor interested in religion. One of the relatively influential members of the first generation of American psychologists, Professor James Leuba (1916), the son of religious parents, had anticipated a career in the ministry but came to a crisis of faith to realize that he could not reconcile his new scientific understanding of the world and the difficulties of modern pluralism with his traditional religious teachings. His "conversion"

to psychology was a means of studying human nature more scientifically – and, in his case, to refute religious thought. (Fuller 2001:197) Taking on the soul and immortality was one way to achieve this. He sent out a questionnaire to 1000 scientists chosen at random from the publication *American Men of Science*, the majority of them college and university professors. About half of the respondents said they disbelieved in immortality (aprox 20%), had doubts about it or were agnostic (aprox 30%). Leuba presented the same questionnaire to lists culled from the membership of the American Historical Association, American Psychological Association and the American Sociological Association, obtaining similar results. Interestingly, of those who said they did not believe in immortality, 45% said they nevertheless desired it (1916:261) and overall, *a larger percentage said they believed in immortality than said they believed in god*, [79] a result which seems consistent with contemporary results. [80] There are no surveys to compare to, but it would seem reasonable to assume that a hundred years earlier the results would not have been the same. (Of course, a hundred years earlier, there was no publication listing *American Men of Science* nor an American Sociological Association.) Leuba's own conclusions were two-fold. First that Christianity faced a problem of belief as more and more people were abandoning the two most important tenets of the faith – the existence of god and the immortality of the soul which, it must be noticed, were held as independent tenets; second, that the condition was related to individualism, and the attendant loss of institutional authority, specifically Christian institutional authority.

[79] For some of his data, Leuba only presented graphic pie charts and so the readings are approximate. Additionally, it is difficult to ascertain the full accuracy of Leuba's results or generalize to the rest of American society, but within each group his figures appear to be quite representative, with a return rate of over 70% and the number of respondents representing 40-50% of the total membership.

[80] Leuba's survey of scientists was duplicated in 1996 by Edward Larson and Larry Witham (Larson et al 1997). Sending the questionnaire to a list culled at random from the 1995 *American Men and Women of Science*, they found that 46% said they disbelieved in immortality, whilst 15% said they doubted it, and 38% believed in personal immortality.

Interestingly, a small percentage of scientists queried by Prof Leuba in his study returned the questionnaire stating that these (God and Immortality) were matters too personal to discuss. To some extent, then, immortality had already been privatized and turned inwards into a matter of private belief.

Yet, the effects of the elimination of an afterlife were clearly not private nor contained, as indicated by society-wide struggles to come to terms with it. Amongst religious groups and institutions, there was a frenzy of attempts to examine and grapple with the effects of science on doctrines of immortality. On the one hand, Christian theologians rejected outright any notion of a materialist end, calling it the "greatest evil" and warning of the "wicked" consequences of any such doctrine - a chief argument being, as we saw, that a materialist doctrine denied humans free will. A number of symposia were organized at the turn of the century, including the Christian Register Symposium on Science and Immortality in 1887 and another one in Chicago in 1902 called, The Proof of Life After Death; A Twentieth Century Symposium. In the discussions of these symposia, as in a number of books and articles, it is easy to see the familiar acrobatics of religion attempting to adjust to a scientific worldview: to either attempt to reconcile the Christian view of immortality with a scientific view of the world by suggesting that their concepts did not contradict each other, that they were merely given to different domains, that science had nothing to say about the spiritual; or to fall back upon inner experience – including its modern, secular vocabularies – which in the case of immortality meant that a *"'natural and not a miraculous"* order of existence was acknowledged, in the words of a Reverend Theodore Munger, since an inner sense of immortality could nevertheless *be experienced* within the self through the self's consciousness of Christ (Munger quoted in Leuba 1916:150-151).

One can see a similar defensiveness in current theological accounts of the afterlife, which tend to justify immortality doctrines with reference to the increasing authority of secular immanence. They argue, for example, that belief is justified until disproved (Zaleski 1996) or else they justify belief through indirect evidence, by marshalling data from scientific experiments on Near Death Experiments and the irreducibility of the mind to matter in order to posit the possibility, even within science, of the existence of a soul (Hick 1976, Zaleski 1996). In concert with this, it is often argued that even if it is an illusion, just like the pascalian wager, it is a good illusion (Unamuno 1972). In brief, even for the religious, discussions about the afterlife and immortality are already entangled in secular discussions about their impossibility.

The naturalization of death (without a soul or an afterlife), and the general shift in the scholarly and scientific presentation of death over the course of the century is perhaps best characterized by the difference in two Encyclopedia Americana articles on death. The 1843 edition defined death as the "end of the organic life of the individual", after which the mind, which *cannot perish*, survived. This being an Encyclopedia, there is already a scientific element infusing the language, such that what is said to survive is now the 'mind' rather than, say, the 'spirit'. Fifty years later, the same Encyclopedia changes its tune considerably, writing that at death, "the matter of which the body is composed undergoes changes we call putrefaction; on the matter of the mind, that is philosophy and science cannot shed nay light on it" (quoted in Farrel 1980:52). The mind is no longer said to survive; yet, keeping to the Kantian strategy, no other position is taken on the matter. It is simply left outside the realms of scientific knowledge. What is scientifically verifiable is "putrefaction", a new term with which to describe the process of death as "natural" – echoing the words of 19th century French materialists, described in the Introduction, who called their bodies after death "decomposing matter".

However we imagine or name a death, it is always us imagining it, naming it. Even putrefaction, which purports to name the most natural fact about what happens at the point of death, has had to emerge in use, as a way of thinking about and categorising what happens. It emerged not as a natural fact suddenly discovered – for societies through the ages have seen the body rot away after death, leaving behind nothing but a scattering of bones loosened from the ligaments and connective tissue; in fact, rather elaborate rituals have been devised around this very process (see for e.g. Bloch 1971). Rather, "putrefaction" emerged as a particular term related to death in contradistinction to religious concepts that said the rotting away of the flesh was not the end of the person. The idea of putrefaction returned death to nature, presented as the "final stage of a natural process" (Elias 2001:46). Yet, when framed as a natural process, decomposition is not the final stage, but just one more process in the endless series of processes in which matter and energy are transformed and transferred within nature. What is hidden or assumed in the concept of the "final stage of a natural process", is the entity whose finality is being described: the person or the mind, whose relationship to the natural is what is contested to begin with.

Nevertheless, as Elias points out, at first the naturalization of death was a way to "allay anxiety", even for many Christians: by placing it slowly within the realms of what was accepted as an ordered natural process, death came to confirm the new "trust in the unshakable laws of nature". Nature had been neither sullied yet nor doubted; it still could be home to various versions of natural theology. Thus, as Farrell (1980) documents, secular romantics of the time, seeing lessons in nature about harmony, framed death as a moment of unity and as a form of the sublime. In secularizing Western scientific societies, trust and a sense of order in the laws of nature was used to build up a general sense of security. It confirmed psychological maturity and

courage, especially in the face of death's soulless finality. Science's ability to produce truth had to be matched with the human ability to face it.

By the first decades of the 20th century, books in the US and Europe commonly spoke of the defeat of death as a modern phenomenon or attitude (Farrell 1980). What was meant by the defeat of death was not what immortalists today mean by it. It was not the elimination of dying altogether; rather, the dying of death referred to the banishment of the specifically Christian terror of death from everyday life. In other words, the terror of death was understood very specifically as a "religious" terror. It was not, at first, a neutral or universal "fear of death". It was specifically the fear of judgment at death, fear at the prospect of "dying unrepentant" or with a bad conscience. The concern was not over *dying* a good or bad death, but over *living* a good or bad life (within the criteria of the judgment). Now, in the wake of religious conviction, death, in the words of one author writing in 1899, was to be regarded "no longer as a king of terror, but rather as a kindly nurse who puts us to bed when our day's work is done" (quoted in Farrell 1980:20+). The terror of death, according to the same author, was being replaced by the "joy of life". These ideas were all framed as being modern: since modernity was to build up a sense of human security and control, modernity's tasks would have to include the elimination of the religious fear of death.

According to the historian David Sloane (1991), the naturalization of death also led to the professionalization of cemeteries and the funeral industry, as lay people and religious authorities distanced themselves from the event and handed the responsibilities of death over to experts. The famous American rural cemeteries – such as Mt Auburn – were designed and planned at this juncture between 1830 and 1850s. These cemeteries reflected what Sloane calls a shift to the "beautification" of death, with the term "cemetery" itself indicating the change as it came to

replace “burial ground” or “graveyard” (Sloane 1991:55). A Greek word for sleep, cemetery signaled the earthliness of death, referring to a transition from which one day one might awaken. In the mean time, death, like sleep, was meant to be gentle. It was depicted through statues representing “Faith” and “Hope”, trees and vegetations with symbolic meaning (oak was immortality, acorn life), turning the material disposition of bodies into a symbolic landscape of optimism (Sloane 1991: 77).

What was understood and felt as the fear of death was changing. Stripped of its social and theological flesh, death-as-judgment turned into empy death, or death itself. The rhetoric about the end of death’s terror was proclaiming the end of one kind of terror. Another sort of terror would follow: the *fear of death itself* arose when there was nothing more to death than putrefaction. The shift in the fear of death was not just a removed doctrinal matter, but had actual effects on life conduct and social psychology, changing moral and temporal pressure points. In shaping their own complicated visions, materialism and secularism had to contend with these effects. Indeed, far from simply deleting the afterlife and the soul, their own visions were often shaped by the implications of their elimination, by the voids left behind.

It is no accident, for example, that the problem of death and immortality appear as crucial pivots in founding anthropological theories of culture just at this time, when materialism was shaping its own view of a world without a prime mover, without souls and with a final death as the central fact of life itself. Tylor’s well-known and influential schema of cultural evolution (1871/1958), for example, begins with the animism of “savages” and progresses through a gradual abstraction from animistic beliefs and their transformation into sophisticated monotheistic concepts of an immaterial soul and doctrines of retribution. Tylor’s first task, then, was to explain how a belief in non-physical spirits could have arisen to begin with. Additionally,

as a materialist, he took it for granted that these entities do not *in reality* exist because they cannot be observed through sense-perception in the same way that objects of science could. He explains the phenomenon by referring to death and dreams – instances in which a primitive mind might experience a vision of something that, Tylor says, does not exist outside that vision – such as dreams, visions or memories of a dead relative. Apparently confused by the goings-on inside their own minds, "ancient savage philosophers" (12) concluded that every person also has a "phantom" or an image. According to this view (again popular today), the entire apparatus we call religion arose through and stands on an original cognitive error related in part to death – which, as Durkheim pointed out, makes sense only if part of what is being explained is already assumed, namely the ability and need to conceptualise spirits and immaterial beings.

In 1911, Frazer (1911/2006), who started out by outlining, through the category of sacrifice, a not so dissimilar genealogy connecting 'savage' doctrines to Christian ones, turned his focus to immortality in a series of lectures at the University of St Andrews. He claimed throughout his introductory remarks that the truth or falsehood of beliefs is a philosophical matter beyond his expertise. His coy humility did not prevent him from pronouncing on such matters, however. His central question is stated as follows: "how does it happen that men in all countries and at all stages of ignorance or knowledge so commonly suppose that when they die their consciousness will still persist for an indefinite time after the decay of the body?" That the opposition of the illusions of the mind and putrefaction of the body should be the pivot around which this question turns is itself a modern way of thinking about the matter. And indeed, just as with Tylor, the entire premise of the lectures is that a belief in the immortality of the soul begins in savages with a cognitive error: the attempt to explain the appearance of dead people in memory and dreams, which is then interpreted – logically, but from limited experience and

knowledge – as the survival of that person, a belief he classifies as universal. That it should be classified as an error, requires the assumption that those savages were confusing dream with reality, the "real" and the "unreal". It also presupposes the mysterious idea of the spirit or deity – how did these experiences, dreams, get transformed into spirits and/or gods? As Durkheim asked in his critique of Tylor, couldn't they just have been viewed simply as dreams? Or did the dreamers have what Durkheim (1995:469) called "the faculty… of adding something to the real"?

But what structured this sort of inquiry and conclusion? What was being sought? Clearly, the notion of religious origins as a sort of primitive illusion had by Frazer's time already become a common explanation of the stubborn fact of religiosity in light of theories of human rationality. In his own words: "it is perhaps the commonest and most familiar that has yet been propounded."

But a further concern is embedded in these inquiries. Gillian Beer has pointed out that the concern with extinction, both of the species and of the whole universe itself, had seeped deeply into Victorian culture (Beer 1996). The Darwinian idea of unlimited speciation and the Spencerian notion of social progress sat in tension with other theories and prognoses, such as Lord Kelvin's prediction of the sun's cooling down, that were spelling out not just individual finitude, but universal annihilation. Like his contemporaries, Frazer refers directly to this fear at the end of the *Golden Bough* where, like Weber, he suggests that all the control over the world will come to naught as human science will be powerless to counter "our slackening planet in its orbit or rekindle the dying fire of the sun." In *Immortality,* Frazer in his usual coy and veiled mode couches the human quest of surviving death in the larger picture of an indifferent and expiring universe:

> When philosophy and science by their combined efforts have ejected gods and goddesses from all the subordinate posts of nature, it might perhaps be expected that they would have no further occasion for the services of a deity, and that having relieved him of all his particular functions they would have arranged for the creation and general maintenance of the universe without him by handing over these important offices to an efficient staff of those ethers, atoms, corpuscles, and so forth, which had already proved themselves so punctual in the discharge of the minor duties entrusted to them.

And yet, he continued, whilst a number of "daring speculators" and "atheistical philosophers" have argued that a deity is "superfluous" and everything has always existed without one, amongst "the educated classes" there persists a belief in a god that at least created this universe inside of which the "minor duties" of physical laws transpires. How can a rational society of educated people continue to believe in such things? For their part, the materialists seem to have replaced the old transcendent cosmos only with silent, inconceivable and impersonal forces – hardly what can be called physical matter. He articulates the consequences of the materialist stance in Frazean prose: "Thus instead of being peopled with a noisy bustling crowd of full-blooded and picturesque deities, clothed in the graceful form and animated with the warm passions of humanity, the universe outside the narrow circle of our consciousness is now conceived as absolutely silent, colourless, and deserted... Outside of ourselves there stretches away on every side an infinitude of space without sound, without light, without colour, a solitude traversed only in every direction by an inconceivably complex web of silent and impersonal forces. That, if I understand it aright, is the general conception of the world which modern science has substituted for polytheism."

So it was within the cold Pascalian infinity of the universe that the finite, scientifically-driven expert of the turn of the century, facing the silence of a deserted cosmos, haunted by the mind's own ability to add color, concepts and immaterial entities to a material world apparently devoid of them, posed questions about immortality and sought answers in the social and biological sciences. These were in part attempts to grapple with the new experiences and implications not just of a final personal death, but of a final personal death within a world devoid of any recourse to a cosmology, a secular world in which human place and purpose are completely under question. If our cosmic existence had meaning or purpose, it would matter less that we were mortal; conversely, if we had eternal life, cosmic purpose would be a moot point.

Temporality and the Afterlife

With the elimination of the afterlife what changed was not, of course, the afterlife so much as life itself, specifically its anxieties, temporalities and attendant pressures. The secular elimination of the afterlife produced an altered temporality, especially in the seemingly unsympathetic and unresponsive context of a silent universe. This enabled new sensibilities towards the time of life and the future.

In his *Essays on Pessimism*, Schopenhauer first presents a secular view of the temporal brackets of existence: "A man finds himself, to his great astonishment, suddenly existing, after thousands and thousands of years of non-existence: he lives for a little while; and then, again, comes an equally long period when he must exist no more" (Schopenhauer 2010). During that short period, we can but chase after time: "We are like a man running downhill, who cannot keep on his legs unless he runs on, and will inevitably fall if he stops." Yet, we are an organism and despite "the cunning and complex working of its machinery" the human organism, running or

stopping, “must fall to dust and yield up itself and all its strivings to extinction — this is the naïve way in which Nature, who is always so true and sincere in what she says, proclaims the whole struggle of this will as in its very essence barren and unprofitable. Were it of any value in itself, anything unconditioned and absolute, it could not thus end in mere nothing.”

In the face of this sort of existence that ends in nothing but nothing, “ever-fleeting time” generates a different experience of lived time, than, say, for a being subject to death but whose life is embedded not in infinite linear time but in cyclical time, or a being whose death represents a break but nevertheless accepts some sort of continuation after death. In this new secular temporality, time becomes “that by which at every moment all things become as nothing in our hands” and so “life presents itself chiefly as a task — the task, I mean, of subsisting at all, gagner sa vie. If this is accomplished, life is a burden, and then there comes the second task of doing something with that which has been won — of warding off boredom, which, like a bird of prey, hovers over us, ready to fall wherever it sees a life secure from need. The first task is to win something; the second, to banish the feeling that it has been won; otherwise it is a burden… Human life must be some kind of mistake.” It is through a new view of humans as part of a unified biological species that these passages on nature and extinction make sense; for it is not simply a specific life that is meaningless, but the existence and strivings of the species, the biological urges built into the species as such – especially in contrast to the cold, immense unfolding of time. All the “bustle” of daily life in “the little span of human life” appears absurd as all “this terrible activity produces a comic effect”. A life lived towards a final death presented a new set of problems and experiences: the fear that time was constantly running out emphasized the anxiety that existence itself was pointless.

It was Tolstoy’s grappling with these matters, via Schopenhauer, that formed the

foundation of Weberian disenchantment – a theory that has for 80 years or more heavily influenced understandings of the modern secular world. Tolstoy had a conversion experience after reading Schopenhauer and thinking about the significance of his own life and the ethial implications of a secular life. In the end, he turned to non-institutional religion, gave up all his property, defended the anarchists and wandered about as an ascetic before dying in a train station.

In one of his last stories, "The Death of Ivan Illich", the main character Ivan is suddenly faced with impending death through that most modern means of structuring future time: a medical diagnosis, which in effect becomes a prognosis, a mark not just of present conditions but of what will come and in what timeframe. Ivan, a modern, non-religious man, is suddenly faced with mortality as a final fact – and this, clearly, effects the remainder of his days. The real cause of Ivan's panic is that with the prognosis, the future effectively ceases to exist for him. He is overcome by a sense suddenly that all possibility has come to an end and that there is nothing to be done any more. His wife and children will go on, the rest of the world will go on, but he shall cease. And in that state of the living dead, withdrawn and lonely, he begins to do two things – decline into actual death while taking stock of his own life. What did it amount to? What were his accomplishments? Is he a failure? How can he know?

Ivan Illich was a state lawyer, a modern functionary who had specific steps on a bureaucratic ladder to climb, a corresponding lifestyle to show for it, and a belief in the improvement of the future through education and the rationalization of government. This made Ivan Illich, if we take Max Weber's assessment of modernity seriously, a distinctly modern man. What is modern about him is the manner in which he takes stock, the way in which he assesses his life in terms of a pragmatic, immanent balance sheet of achievements and failures. Ivan Illich

draws our attention to the measurement and assessment of life in the secular age, without an afterlife, without a post-mortem judgment based on moral notions of good and bad, or a relational sense of self, or a Weberian ethics of brotherliness. In Ivan's world, life – feeling provisional, disconnected and meaningless in itself – will be measured via impersonal, immanent devices that tabulate, quantify, and determine success (what Tolstoy, in his later Christianity, came to see as the highest vanity).

These features of secular temporality are just what Weber picks up on as he develops his vision of disenchantment in a scientific society with the predominance of technical rationality, a logic starting out from the premise that ultimate values are absent or indeterminable. What mostly has passed unremarked in discussions of disenchantment, is the way Weber enters the discussion through an existential weighing of modern life and death in a scientific world. Though he does not use the term "secular", he clearly analyzes the separation of value spheres and domains of activity. As a secularist, though one with doubts and struggles, he also adopts the position that there is no simple turning back from the scientific worldview: *in principle*, all things of this world can be mastered, even if science cannot guide people as to the ends (what should be mastered and why). He considers science more efficacious than magic, though both seek to manipulate the world towards a particular goal. However, the work of science is *unending*: "Scientific work is chained to the course of progress" (Weber 1958:137). This means that every technical achievement will be eventually outdated and surpassed; every work will become obsolete. "In science, each of us knows that what he has accomplished will be antiquated… That is the fate to which science is subjected; it is the very *meaning* of scientific work… Every scientific 'fulfilment' raises new 'questions'; it *asks* to be 'surpassed' and outdated… In principle, this progress goes on *ad infinitum*."

The kind of progress Weber outlines is literally open-ended – that is, there is no end to aim at, and each achievement is obliterated by the next one[81]. Such an open and indefinite sense of progress is markedly different from earlier visions of progress, the enlightenment's controlled, planned advancement towards utopian ends and social perfection, in which (as per Comte and his academic progeny down to Weber's time and after) the social sciences, natural sciences and the state could work together to plan on and produce the good life, reaching a particularly desirable stasis. That was the original sense of progress. It was directed, teleological, moving history, in Marxist theories as much as in liberal theories, towards Kantian perpetual peace or utilitarian states maximizing Mills' grab-bag of general happiness.

Since "scientific work" is potentially unending and each achievement will only be surpassed, the dilemma of the conduct of daily life is first raised for the scientist, and gets posed clearly as a problem of purpose: "Why does one engage in doing something that in reality never comes, and never can come, to an end?... What does he who allows himself to be integrated into this specialized organization, running on *ad infinitum*, hope to accomplish that is significant in these productions that are always destined to be outdated?" (138) The condition of the scientist in modern society is to live with a sense that is the opposite of fulfillment as outlined by art; it is always open, unfinished, liable to be outstripped sooner or later. What can be, or even feel, significant if it is immediately outdated? What work matters, and how can it matter, if its whole point is its own inevitable obsolescence? Is this not the absurd?

[81] Weber's position is not Nietzschean, in so far as Nietzsche thought technology to be irrelevant to the main task of power and joy; in fact, even as he did not deny science's improved ability to explain things in the world, he suggested that these were merely better mechanical descriptions (Gay Science) and possibly disruptive of the ideal of return to an unencumbered Dionysianism or science of joy (Gay Science, Twilight of the Idols). That world was already destroyed by religious morality long before the ascendance of science.

Whereas predecessors like Schopenhauer applied their view on the absurdity of existence to all of human history – that is what humanists and literary authors came to call the "human condition" – Weber sees this as a problem that has arisen at a particular time and place in human history. So the question is also historicized: is it possible, and if so how, for *this* scientific civilization to designate a convincing trajectory for life?

His answer is a provisional no. "Science as a Vocation" was delivered on the heels of the devastations and disappointments of the first world war. While his lecture concentrated on the "man of science", Weber was also commenting on a modern condition, on what he called "civilized life". To expand from the scientific worker and *his* narrow domain to a more general consideration of society and history, Weber draws on a figure he had long admired, Leo Tolstoy, and his preoccupation with the meaning, not of life, but of death. Immediately after the famous passage defining disenchantment, Weber, taking off from Tolstoy, situates all "civilized men" in the infinite line of progress, on the path of obsolescence and meaninglessness:

> "… for civilized man death has no meaning. It has none because the individual life of civilized man, placed into an infinite 'progress', according to its own imminent meaning should never come to an end; for there is always a further step ahead of one who stands in the march of progress. And no man who comes to die stands upon the peak which lies in infinity. Abraham, or some peasant of the past, died 'old and satiated with life' because he stood in the organic cycle of life; because his life, in terms of its meaning and on the eve of his days, had given to him what life had to offer; because for him there remained no puzzles he might wish to solve; and therefore he could have had

> 'enough' of life. Whereas civilized man, placed in the midst of the continuous enrichment of culture by ideas, knowledge, and problems, may be come 'tired of life' but not 'satiated with life'…. What he seizes is always something provisional and not definitive, and therefore death for him is a meaningless occurrence. And because death is meaningless, civilized life as such is meaningless; by its very 'progressiveness' it gives death the imprint of meaninglessness."

In pre-modern life, as in art, each life is its own fulfillment. In modern life, each life is surpassed. Why? Because despite mastery by calculation, an individual life does not appear as "definitive" but rather as something "provisional", hence always incomplete and unbounded. The isolated, finite individual with no recourse to an afterlife or a cosmology stands in an infinite stream of progress which, he is aware, will surpass him, making his particular life appear insignificant or meaningless.

So Weber points to a larger, I would say existential, crisis in the problem of life conduct. "What does he who allows himself to be integrated into this specialized organization, running on *ad infinitum*, hope to accomplish that is significant in these productions that are always destined to be outdated?" In an individualized, technical society outrun by itself, the workaday becomes a problem: "[w]hat is hard for modern man, and especially for the younger generation, is to measure up to *workaday* existence" (149). That problem is not about what we ought to do in a particular situation, but *why we ought to be doing anything at all*.

This *turning of existence into toil* – which was framed by Schopenhauer and was significant for Marx in the 19th century in terms of alienation, that is, of man being distanced

from his species-purpose through the capitalist commodification of his labor, of the dehumanization of human work and social relations – looms significant for Weber at the turn of the 20th century because its end is punctuated by a simple full stop, death.

Though he never explicitly talks about it, Weber's theory of and sentiment towards disenchantment, like those of Schopenhauer and Marx and others who come later, only make sense within a secular space in which they, and everyone else, must at least grapple with a materialist assumption: that after the physical death of the person there is no form of continuity of personal identity. Weber links individual finitude to the infinite timeline of progress which constantly over-runs itself, as well as to the collapse of a cosmological worldview, the falling away of a unifying carapace that lends a sense of place or purpose to anyone engaged in daily activity.

Weber's observations on disenchantment recognize an important secular shift in temporality, a shift that effects expectations and experiences of modern living and dying in significant ways. In this secular space, the human is a finite body dropped into an infinite timeline, running against it. In a materialist world of scientific progress, in which personal death without an afterlife is final, and in which everything we "achieve" in this life will be surpassed, daily life and work will feel provisional and incomplete, life becomes a project, but, as a project with no greater purpose, it becomes subject to failure. From the wider perspective taken up by Weber, *all life* in a disenchanted world is ultimately subject to this failure, regardless of its current – merely current – worldly success. All life will be surpassed. Despite this absurdity, despite the certainty of cosmic failure, we must get on with the *workaday*, get on with it without knowing why, without even asking why.

The new relations to death as a final point of life also influenced secular knowledge production: as Foucault demonstrates in his own excavation of finitude in *Order of Things* (1970), time becomes a suddenly important factor in economic calculations, as well as biological and demographic theories, including Malthus'. It is really the lack of time that becomes the paramount measure of human activity and value. His paradigmatic case here is economics, with Smith's analysis of labour marking the turning point, wherein value is no longer related to need as such, either in use or in exchange, but to time, that is to the amount of toil in time, time being a limited good. Rather than need, Smith "unearths labour, that is, toil and time, the working-day that at once patterns and uses up man's life. The equivalence of the objects of desire is no longer established by the intermediary of other objects and other desires… if there is an order regulating the forms of wealth, if this can buy that… it is not because men have comparable desires; it is not because they experience the same hunger in their bodies, or because their hearts are all swayed by the same passions; it is because they are all subject to time, to toil, to weariness, and, in the last resort, to death itself" (225).

A similar historicity, also brought on by dying, permeates biology as soon as function takes over taxonomy as the guiding principle in the investigation of nature. If taxonomy was the classification of visible signs (organs, morphology, etc), function is the labour of the interior, concerned with efficiency, maintenance and ultimately survival – that is, with life. This view of function also accounts for death as an integral part of life, in as much as the death of the individual is responsible for nothing more, and nothing less, than perpetuating life itself. Life then is conceived of as a force overarching and encompassing the individual bodies endowed with it, the living beings which are "no more than transitory figures" (278) in the "infinity of life". This dynamic view of nature, balanced between transition and continuity, necessitating

death in the act of constant transformation of life, provides the grounds not for a natural history, contingent and mythical as that was, but for a history of nature, that is, for a theory of evolution. Each sentient being is a mere instance of a larger biological unfolding called life.

Whilst he is concerned with its anthropological implications, Foucault does not specifically explore the kinds of social experiences finitude eliminates and other kinds of experience it may give rise to. If both life and labour had become infused with an analytics of time, then certain experiences of time, certain social structures of time, must have changed[82]. Where Foucault claims that the metaphysics of infinity has become useless in an epistemological sense, as a way of grounding knowledge, he diminishes the fact that a sort of infinity nevertheless and by his own account engulfed the whole condition in a particular, phenomenological way – not the infinity of god or transcendent forms of knowledge, but of the apprehension of time as an on-going, endless sequence of events into which we are thrown and of which we constitute only a minor, finite fragment, that is to say, the infinity of progressive time vs the finitude of individual time without an afterlife, or death within a naturalist conception of the world.

In Darwin, there is the idea of perpetual generation or "succession by generation" in an ongoing "secure future of equally inappreciable length". Some commentators have argued that notions of immortality and survival were secularized through Darwinian theory and transferred to the idea of survival and immortality through the perpetuation of the species. If that was the case in the popular or eugenicist imaginations, it was certainly not what Darwin himself had proposed. To the contrary, what is embedded in evolution, as in progress itself, is obsolescence.

[82] In a different vein, EP Thompson's analysis of time and industrial capitalism is an empirical incursion into this very idea, documenting, amongst other things, the shift in the practices of production from being task-oriented – ie make this product – to being time-oriented – ie work from 9 to 5 on a time-sheet; the imposition of time-discipline and the ideology of 'time-thrift' upon the old irregular work habits required by pre-industrial production.

What "succession by generation" entails, in this ongoing progress within an "inappreciable length" of time, is the transformation of the human – as of other species – beyond recognition. In Darwin's words: "Judging from the past, we may safely infer that not one living species will transmit its unaltered likeness to a distant futurity" (Darwin 1859). Thus, in defining the development of species, Darwin was also laying the grounds for its natural extermination in time. Humans, in time, would no longer be human. Or at best they would be obsolete.

I am not suggesting that changes in the sense of time and finitude are only caused by the secular transformation of life and death. I am arguing that different eschatological frames and conceptions of the afterlife (or lack of it) have an effect on lived time. The afterlife is experienced and used also as a temporal strategy. Take, for example, changes in Christian afterlife doctrines in relation to the medieval invention of purgatory. Whilst conceptions and doctrines of the afterlife were based on ideas of justice and reward or punishment, of good and evil, they also applied varying pressures on the *end* of life (Le Goff 1984; Binski 1996; Aries 1975). Aries narrates a change in Europe from collective to individual death. He suggests that there was in early medieval Europe a perhaps inherited sense that the death was a "collective destiny". Everyone ended up there, and the only difference was that if you had entrusted your body to the church then at the second coming [ie at the end of time], you'd be awakened for eternal life in heavenly Jerusalem. As he writes: "There was no place for individual responsibility, for the counting of good and bad deeds." A number of ideas and material practices (iconography, deathbed rituals) transform the time of death into the time of judgment and in particular of individual judgment: The weighing of the souls, inspired by the book of Mathew, and then the liber vitae, which he calls "the formidable census of the universe" wherein good and bad deeds are chalked up, and finally the joining of the traditional deathbed ceremony and

this moment of judgment. For Aries this was crucial in making of death a mirror in which the self was revealed, the "speculum mortis". But in passing he also pays brief attention to the transformation of destiny, the notion he started out with. What he remarks is that in this movement, the eschatological time between death and the end of the world is eliminated. Your destiny was made right there and then.

It is in the harshness of this model that, according to Le Goff, purgatory is invented. Before purgatory, the last judgement took place at the time of death. Christian time, then, was in a sense also finite time in so far as it had an end in the final judgement and the end of the world (Binski 1996). This finality, with its apocalyptic vision of the end of time and of the end of the world, brought with it a sense of terror, which in turn was used as a means towards self-improvement – the moral force of a retributive model of the afterlife. The reaction against this "eschatological fanaticism", in the words of Le Goff (1984: 231), led to the invention of purgatory as a middle time, a time of waiting, wherein the dead became the responsibility of the living who could pray and do good deeds for them. Whilst this intercessionary strategy might not have been vital when it came to the few saints and the few more damned, for regular people in a state of venial or forgivable sin it came as a great relief. They could now transition to heaven from purgatory. As Le Goff argued, the invention of purgatory resulted from a need for hope and justice. Such a hope was created by altering the temporality of lived life through a manipulation of eschatological temporality. The temporal (not moral) pressure of death on life was altered by expanding eschatological time. The afterlife, once established, creates temporal pressures and so at various times various new models were created as pressure valves.

In his expansive study of attitudes to death in Europe, Aries compares the medieval rounding off of life, the "final meaning" or "its conclusion", gained at the death bed, to the

experience of modern dying in which he argues that a deathbed moment that allows for the biographical completion of life is absent. As a result, "Today the adult experiences sooner or later… the feeling that he has failed, that his adult life has failed to achieve any of the promises of his adolescence." (Aries 1975:44) In this secular eschatology of judgement, the liber vitae will be written in the language of achievement and failure. Taylor (2007) indicates a similar effect when he argues that in secular modernity "fulfillment" has become problematic.

The objective ordered time of modernity, segmented and rendered into the time-discipline of the capitalist workday, with its ideology of "time-thrift" (Thompson 1967), turned time into a resource. However, as Lash and Urry comment, time can not be "stored up and saved… since it inevitably passes" (1994: 226). There is an inherent tension then in modern temporality between objective, infinite time as it is overlaid by a set of finite, subjective temporalities. In the context of considerably extended average life expectancy in industrialized countries, Zygmunt Bauman (1992) sums up this tension in the temporality of finitude as a paradox: we live longer, but feel short of time.

Seen under the combined light of Aries' eschatology and studies of modern temporality, the future may be regarded not only as an opening, or an unknown, on the timeline ahead of us; but also as a force coming at us, acting against us. Because in the context of radical finitude there is nothing after death, nothing of value at any rate, the future-qua-death appears as a kind of pressure.

Just as the introduction of purgatory into the afterlife regime of the middle ages served to relieve the pressures of an immediate and final judgment, so experiences and expectations of time in contemporary life are re-constituted by Immortalism's temporal modes, by its time extension and contraction of a sense of complete or incomplete time.

Though they make no reference to finitude in this sense nor to the afterlife, Bellah and his colleagues have analysed the local, rather than universal, effect of temporal pressures at the nexus of individualism, the American dream of success and the mid-life crisis, "especially for middle-class American men" – a group that constitutes the great bulk of the immortalist movement. The frustration of a sense of progress in individual careers at around the time of "midlife" – itself a secular temporal designation – "marks the 'end of the dream' of a utilitarian self…" (Bellah 1985: 69). "As these dreams die, the possibility fades of a self that can use work and its rewards to provide the matrix of its own transcendent identity…" As a result, "making it loses meaning…" Bellah contrasts this to a calling – a Weberian comparison – in which it's not the rise in careers, framed by points on a timeline, but the actual doing, temporally unframed, that matters. Contemporary life does not encourage callings.

Echoing the idea of missing a life's goal, the psychologist Robert Kastenbaum who has analysed the relationship between death and meaning in personal lives writes, "How we project (or fail to project) purpose and fulfillment into the future will be a major influence on how we construct both life and death" (Kastenbaum 1997: 378). Similarly, the social philosopher Norbert Elias (1985/2001) suggests that our valuation of the goodness or badness of death "depends on how far the dying person feels that life has been fulfilled and meaningful – or unfulfilled and meaningless… we can perhaps assume that dying becomes easier for people who feel they have missed their life's goal, and especially hard for those who, however fulfilled their life may have been, feel that the manner of their dying is itself meaningless."

The temporality of modern living was stuck between contradictory forces, between two futures that had opposing effects on human life: an endless, open future into which life in general moved, and an ultimately closed future which pushed back against life. Immortalist narratives

are revolts against this pressure. They are not just revolts against death as such nor do they simply entail, in the words of EP Thompson, the "flouting of respectable time-values" (Thompson 1967) like previous revolts against modern time such as the beatnik or bohemian or anarchist versions. The technologically driven movements to transcend biology and the chronic imperfections of the present are a reaction against secular finitude widely considered, where temporal crises get framed as biological limitations, where biological decay and social experiences of incompleteness fold into each other, and where the infinite progress of knowledge leaves the finite individual behind.

The most common refrain amongst immortalist subjects is the following: "There are so many things I want to do that I haven't done yet." They express their desire for life extension as a way of catching up with time itself: "I don't have time to do everything I want to do in this lifetime. There is so much to learn and do." The underlying sense of incompleteness prefigured in Weberian finitude and analyzed in Bellah's work in the US, is clearly audible here. A transhumanist, cryonicist and molecular biologist stated it in these terms:

> I am interested in cryonics primarily out of a sense of curiosity and adventure not because I think this ensures my sense of survival. I don't have a particular problem with the issue of death, because when I die, I simply cease to exist. It's not like I go to hell and spend eternity suffering. If I cease to exist it is a totally neutral state for the universe, for me… To start off there's a great sense of adventure in terms of: the greatest mystery is the future. There are all these decisions that I make and society makes where we have no idea how it's going to end up in the future. From the perspective of all the things that are going on today, it would be fulfilling to be able to personally witness at some point in

> the future the consequences of all the things we're trying to do. So I consider cryonics worth the effort if I could regain consciousness, even for a 24 hour period, 100 years from now, just to satisfy the curiosity that surrounds the future. Even if I purely had the chance to observe for 24 hours.

Now let me enter a longer life narrative through a numbered road in a brand new development of a suburban American town, with office parks and strip malls and low to mid-income housing developments. The office managers and office owners live in another town, nearby, in higher income housing developments. RT gives me directions to his home on the phone. "Turn right before I'm in the third subdivision. When you get to the gates press 133 on the buzzer."

The housing community is gated. Newly built, before the mortgage crisis, with affordable homes for anyone with a steady income around $30,000. RT bought in recently though not without hesitation. He was hoping the development would slowly fill up. He works two jobs, doing life extension-related research during the day and stocking shelves in a supermarket chain at night just to make ends meet. I buzz RT on the security intercom and the hydraulic pumps roll open the metal gates. The houses look all the same, so I miss RT's at first and have to turn around.

RT is an affable, generous young man. He tells me I can stay with him instead of renting a room somewhere. He has an extra room and an air mattress he pumps up. He is an avid and long-standing cryonicist, with a strong interest in Artificial Intelligent. He wants to live on but he wants to live on because of complex reasons, not, as he says, out of a fear of death, but because

compared to what it could be in the future, life here and now is simply inadequate – but inadequate in a specific way. He brings out some beers and we start talking.

> I wanted to be an astronaut since I was five but I tore my ACL when I was 15… I live in a very primitive society and we are stuck here in our nest so to speak. I was born before I was supposed to be. It's not a metaphysical statement. I realized I was born at a primitive time and I wanted 'Star Trek' now. We're all stuck here and technology hasn't evolved to take us anywhere else... I really want to get out there… Our galaxy is on a collision course with the andromeda galaxy and in roughly 300 to 500 million they will collide. So there are two fates for the earth, either it will be flung off or it will be recycled… I have a Frank Tippler philosophy, the universe is going to go on and on. We should remake the universe as suits intelligent life. There's a great deal of opportunity for us to do amazing things. But right now we're stuck in these primitive bodies that fall apart on us.
>
> Fall of 94 I was watching a PBS program and they had a bunch of PhDs on there and – the most optimistic PhD said humans will never live beyond 300 years and I was frustrated at that point. And I said, 'Those guys have never heard of nanotechnology.' I didn't know of cryonics as such but once I made the connections between nanotech and cryonics and molecular reconstruction, I thought wow, I could come back young. And then become an astronaut. I went down to the university and looked up the term cryonics and said ok, I got the term right at least. I went down to to the library and went to the computer and in the database up turned the Omni magazine piece that

[science fiction writer and early cryonicist] Charles Platt wrote… I contacted Alcor and other companies at the time… I grew up in a small town, with rednecks so, I saw that they [Alcor] thought in other ways, more like I thought…

If I were a religious person and felt assured that there was an afterlife then it would be easier in some respects. Basically we're talking about death here, a finality. We hit this point and when it comes down to it, we really don't know. Is there a life after death, a benevolent god? If so, this stuff is secondary. But right now that isn't assured so this [cryonics/Immortalism] is all I got."

It's not that death is the driving factor as such. But there are things I want to do. I want to see the universe and I can't do that in 70 years here. My interest is in exploring, in understanding, learning…

It's fascinating I really love science in that there's so many mysteries out there and when someone makes a discovery it's like wow! And the universe becomes a more interesting place. And there's always these new discoveries and it's like a present, it's like being a kid at Christmas. Some scientist says, here look at this! When science finds these new things they're like treasures, like presents…

RT's may be read as a counter-narrative to the narrative of disenchantment. What life extension affords in this first instance is not just the opportunity to survive, nor even to simply recover the dream of becoming an astronaut in another life, but the chance to catch up with time, partly in order to fulfill personal goals but also to see how science and knowledge develop.

Because a secular frame admits no afterlife – that is, within a secular frame an extension of life beyond the biological body is sequestered away – secular explorations of survival and continuity beyond death have been thin. Modern death has been mainly studied in terms of memorialization and memory-maing, that is, in relation to a past, to the retrieval of the Proustian time past. Immortalism allows us to consider death as an occasion of future-making. My references to prior afterlife doctrines or experiences are not meant to suggest that contemporary Immortalism ought to be categorized as a religious activity. I am trying to recast the notion of an afterlife as a temporal strategy that reacts to and/or creates temporal pressures in the lived life; to consider the afterlife and immortality as temporal forms that help us assess how the future is brought into the present today, in this case specifically to see how the various future-forms of techno-science mark and materialize time.

Death and Future-Making

The single figure that best focuses the future is the cryopreserved patient, in its third state, in-animate in the present, said to be waiting for the future. In its actual material presence, albeit hidden in a cryostat, the suspended patient demands care and protection, and comes to embody the relationship between present selves and future ones, carrying the interests of a future self and thus creating an immediate connection between the present life and interests of cryonicists and their future ones. Without an entity that objectifies or embodies the future – any entity including predictions, charts, promises, deadlines, etc. – future selves and interests are difficult to relate to present ones; a non-existent future cannot influence the present. Materializing the hope of future reanimation, the cryopreserved embodies a promise.

It was as I was following Ben Best, the director of the Cryonics Institute, on his routine, daily chores that I was first struck by these thoughts. Best was going around the storage area, checking the level of liquid nitrogen in each cryostat, then moving outside to check the pressure on the large liquid nitrogen supply tank that supplies all the other ones through a network of hoses fastened to the ceiling. The liquid nitrogen in the cryostats and the tank "boils off" at a very slow rate and needs replenishment only every two weeks or so. But the tanks are checked everyday to ensure that everything is functioning properly – to avoid low-possibility problems such as leaks or valve failures. I had read about stand-by procedures during a person's dying days and would later participate in a cryopreservation. Those are the crucial highlight moments in the process of cryopreserving a person. But they come about in spurts. The in-between time of day to day work consists of research and paperwork and experimenting with new procedures and ideas, but it also consists of these daily maintenance tasks related to the "patient" after cryopreservation.

Care, of course, is taken at cemeteries, as well; the lawn is tended to, the garbage is picked up, the stones are polished, memories are preserved or, in the case of flowers, refreshed. But looking at the difference through a cryonicist's viewpoint changes things. No one involved or connected to the *bodies* in the cemetery would dispute the notion that they are at this point dead, whether or not they are regarded to have continued existence in some other form, in some other realm. The cemetery is the precise indicator of this state of affairs; it is a holding pen for bodies depleted of personhood, or, to some, the soul. This perspective triggers a very different sort of care. The care of the lawn or the tombstone by caretakers of the cemetery is not a matter of *caring for the cadaver*, let alone the person, but of general respect – for the family whose dead is buried in a cemetery, for the image of the business itself, and for society in general, showing

itself to be a compassionate society that does not forget its dead. Of course, as can be seen by the number of neglected old graves and dug up cemeteries, the dead are *eventually* forgotten. In the short run, both inside and outside the cemetery, memorialization of the dead continues, even in secularized settings, through various material practices, such as placing flowers, hair or photographs on tombstones or keeping objects of memory or talking to and cleaning an urn; these are the private concerns and practices of family members who are extending the memory of the deceased in a de-ritualized secular setting (Hallam and Hockey 2001). Even communicating or setting up other forms of exchange with the dead (Walter 2005) is not considered by the practitioners to indicate continued personal and physical survival in *this* world; indeed, it *requires* the end of the body as the medium of thisworldly existence, which is precisely why communication with the dead requires a "medium" of some sort who can bridge the communication gap with otherworldly, non- bodily beings.

Being there with Ben Best through the day, I tried to think of those in the cryostats as potentially viable, physical life forms *of this world*, which is what they are for cryonicists – though there are "no guarantees", as Best likes to repeat. The task of checking the liquid nitrogen valves began to strike me as more portentuous. If this was about maximizing the chances of survival, then it felt like something more than caring for the lawn, different from extending memories of he past or carrying out some sort of communication with the realm inhabited by the dead. It was more like a nurse doing his rounds of coma patients, checking the vital stats. Ben did not know most of the people in the cryostats, but he had an intense sense that he was potentially caring for their future presence in this world.

When I later asked Best about his responsibilities, he said:

> Sometimes the responsibility seems pretty awesome and I think about who else could do what I'm doing and I can't think of anybody. That sounds like an egomaniacal response, but it's about how comfortable or uncomfortable it makes me feel giving what I'm doing to someone else… in terms of all the things that need to be done and understanding the technology and the goals and the commitment, and all those kinds of things taken together. The responsibility, there's so many things that could happen, so many things that could go wrong, so many things I worry about, and sometimes the worry can get quite strong and I can get myself quite upset about things that can go wrong and things that could happen…
>
> For example?
>
> When I had this open house, I was worrying about someone could come in and try and blow up this cryostat. I feel like society is safe enough at this point that we're not going to get somebody doing that, but I have to think about that. I don't want to put us at risk.

By risk, Best was referring to a host of possible occurrences, such as accidents and malfunctions, as well as "perpetrators", mainly religious people offended by cryonics, who might do to cryonics what others have done to abortion clinics. Given his workload and his worry load, Ben Best actually has chosen to sleep at CI headquarters, with minimal needs and only a basic level of comfort. Worry and care go hand in hand.

What transforms these absolutely mundane, building-maintenance types of activities into something like an "awesome" responsibility, to use Ben Best's words, is the conceptualization of the cryopreserved body as containing some possibility of future life and the concomitant responsibility of protecting that life: acting with care towards it for the sake of its future, is also acting with care towards it for the sake of their own futures, the future of the project. The sense that such a life is subject to protection, and that the protection is taken seriously, makes members feel much more secure in general about the practice of cryonics today and their own involvement in it, aside from any facts, shaky as they are, about the science through which the practice as a whole is justified. This "ethics of protection" (Hamdy 2008), oriented towards the uncertain future, produces a context of trust in present practices. One of my interlocutors, who decided to buy a house and live part-time near his cryonics facility of choice, explained the importance of this attention to protection, risk and care to his decision and general satisfaction:

> I've been very pleased with the general caliber of people working [here], and their commitment, and how basically honest they are, and how serious they are about looking after the people who have already died, who are suspended… Even if it hadn't been serious, I still would have joined. The chances [of revival] would have been vastly diminished, but there'd still be a chance. So I would've joined, with loads of misgivings…[But] people put a lot of thought into that and that confirmed that this was a serious organization… to make sure that no accidents take place that could render them [the suspended] incapable of being properly brought back. All the protocols required to maintain a successful suspension are followed with great care so that their chances of

> survival after death are maximized…. Simplest item I can think of is that they are suspended in dewars and the dewars are kept cool by LN and LN evaporates and you need to watch that. If you don't, one of them might evaporate faster than you think and before you know it, the person is heated up again. But of course, the dewars are constructed in such a way that they last for months… and the fact is that they are put in a specific room that is carefully monitored and only certain people who are totally reliable can go in there… the rest of us can only look inside. So security is very important.

The imagined future of the cryopreserved produces and organizes social ties in the present. I consider these issues in the context of cryonics, but exchanges between the future and present have wider implications in political, economic and social organization How can these imagined relationships effect social structures like kinship or political categories such as trust – or indeed the economic institution known as a trust? Modernity, despite its understanding of itself as a rupture with past practices and tradition, needed its anchor in identities of the past in order to substantiate and justify the arbitrariness of the new connection between nation and state, between the governed and the governing. In this it had to create ties that would transcend kinship and other local ties, by creating wider "imagined communities" (Anderson 1983/2003). As a result, imagined communities are generally thought of as imagined because they are dispersed in space with members not linked physically. But the imagined community of modernity has entailed a future imaginary too, the possibility of imagining the national community progressing towards a better, utopian future. That future is what enables the commitment, or sacrifice, to the present. The nation is a way to connct future generations to the present. The work of the nation was

imagined to be *for the sake* of those in the future. Ernest Renan, who helped define nationhood for the French, captured it perfectly: "A nation is therefore a large-scale solidarity, constituted by the feeling of the sacrifices that one has made in the past and of those that one is prepared to make in the future" (Renan 1996). If not for those to come, what would it be all for? [83] The formation of community and trust organized around a future generation, or even a "potentially alive" figure, brings attention to the fact that modern biopolitics is also dependent on an exchange of present and future lives and the regulation of continuities, especially continuous identities, between the present and the future.

[83] Renan framed this exchange as sacrifice. Sacrifice, for Renan, could either involve the giving up of life or a commitment to civic duty. Renan cited them together, "sacrifice and devotion", in one breath as he tried to define a nation – over and above kinship and regional loyalty – at the end of the 19th century. For him, sacrifice made the nation through a sense of common obligation to the past. That sense of obligation comes about in the understanding of the suffering and dedication of those who went before, and therefore commits individuals to doing the same for the health of the nation in *the future*: "One loves in proportion to the sacrifices to which one has consented, and in proportion to the ills that one has suffered… A nation is therefore a large-scale solidarity, constituted by the feeling of the sacrifices that one has made in the past and of those that one is prepared to make in the future." Through the formation of the nation-state along with the emergence of secular humanism, the normative understanding of sacrifice has gone through many changes and does not refer exclusively to the giving and taking of life. Tellingly, Hubert and Mauss (1898) first defined sacrifice in religious terms. It related to an exchange with god, of gaining certain rights over one's deity – that is, a calculated exchange. "Sacrifice," they wrote, "is a religious act which, following the consecration of a victim, modifies the condition of the moral person who accomplishes it or that of certain objects with which he is concerned" (13). Later, in *The Gift*, Mauss removes the exclusively religious reference, but maintains the idea that sacrifice is a matter of calculation within an economy of exchange. He characterises it as a contractual relationship between persons, those who give and those who receive (Gift: 23). Strenski (2002) traces the changes in the use of the concept in France in terms of a specific contest, within emerging configurations of a secular nation, between a 'Catholic' approach to sacrifice that advocated a total giving up of the self and a protestant one, adopted by liberals, which proposed simply *a giving of the self in terms of civic duty*. This latter position, Strenski shows, is linked most strongly to 'the Durkheimians'. In fact, Hubert and Mauss' famous essay was written in the context of this contest between absolute sacrifice and calculated sacrifice. Hubert and Mauss, according to Strenski (p 157), were writing a retort to the Catholic version of absolute sacrifice, advocating for a commitment to civic participation without the necessity of giving up life. Even if their focus was on 'primitive sacrifice', the audience was 'French humanity'.[83] What seems to have happened was that through the emergence of a secular humanist ethos along with the requirements of nationalism, sacrifice came to mark two different ideas. Robin Law (1985) traces the use of the term as it moved between religious and secular concerns, initially marking a division between properly religious Europe and pagan others, and later, as Europe viewed itself as more secular, came to mark a division between the civilized and the savage. As a savage practice with a religious past forced on a victim, sacrifice was vilified and rendered inappropriate. Yet, as a commitment made voluntarily but necessarily to the nation it was deemed noble (Renan 1996).

In cryonics, these issues are often raised in terms of one vital question: how can we know that those in the future – including people at Alcor, whoever that will be – will revive us? And revive us in a way that is in our best interests? Alcor's official word on this is as follows:

> Socially, Alcor is a community. *Some members of this community are alive and healthy, while others have been cryopreserved.* (emphasis added) This community forms an interconnected network of friendships and close ties. At any point in time the healthy members of this network have friends, relatives and loved ones in cryopreservation and will seek to revive them. Once revived, those members will in turn have other friends in cryopreservation, and they will in turn seek to revive them.
>
> The plan is not for "them" to revive us. The plan is that we, the Alcor community, will revive ourselves.

The cryopreserved figure, a figure who has gone through one life, and whose life is being potentially extended in the future imaginary of cryonics, is focusing around itself a range of practical and ethical questions – questions of responsibility and conduct – in the every day life of cryonicists. That figure may not end up having an actual future life as a person, for it may not be reanimated at all or the future may not quite arrive. But anthropologically that may be irrelevant: what matters is that the suspended figure already organizes actions in this world, figuring as a sort of ancestor located in the future. The suspended patient embodies all the potentialities of the future and so articulates a connection between the unknown future and the manageable present,

not by placing the future ahead as a destination the present moves towards, but by turning the future into something already existing in material form, shaping the present. By establishing a connection between the fully alive and the cryopreserved (or potentially alive) members, the future is materially smuggled into the present. The community is being defined not through a shared past, but a shared and imagined future ethically organized around the figure of the cryopreserved whose commitment to that future is already visible, concrete, embodied – and to be emulated.

As one member put it: "They [those who are already suspended] put confidence in us to do the best for them… you made a contract with them to do the best for them so that they can be reanimated… they were persons and we hope to bring them back as persons." Another participant told me after a cryopreservation procedure, "What I like about doing Cryonics right now is that it's being done by a community, not by professionals in institutions, it's people doing the favor for each other."

Questions about trust and the future are settled by evoking continuity through the cryopreserved, that is through the figure of future potential life. Traditionally, community and continuity have been organized via primary social ties and structures of kinship or ethnicity that have connected past, present and future lives through the management of deathways (eg via ancestors (Bloch 1971; Metcalf and Huntington 1991), or through modern configurations such as national identity or the economic sphere that re-embed the individual in secondary social relationships, often through institutional modes of control such as the State or the media (Beck 1992: 131). In cryonics, the future is the imagined space through which new ties are forged in the present, new institutions set up, and new experiments on the self and on the social are tried. Traditional kinship structures are often viewed as being, and in practice sometimes turn out to

be, obstacles. Although family and even intergenerational membership is increasing in cryonics, with three generations signed up in some cases, most members are still males signing up alone, sometimes with the consent of a non-cryonics spouse, but sometimes also without family members even being aware.

One person told me that in the circle of his friends and family, he was the only one signed up and thus was anticipating reanimation in a world bereft of those he has been close to, a condition that he, like many others nevertheless shrugged off. "So you make new friends. That's great." Regarding whether it matters that he'd be coming back without family, another person told me: "No, I feel like it's a second life, we're reinventing ourselves again." The American ideal of self-invention through ahistoricity shines through the veins here. But ahistoricity must be construed simultaneously as an erasure of the past and an opening towards the future.

Whereas structures built on the past manage continuity through preservation (memories, institutions, mausoleums), cryonics, as a structurally futuristic project, manages continuity through an imagined future in which the preserved and reanimated must depend on each other. Indeed, the point is that they already do! Ben Best, the director of Cryoncis Institute, makes this clear:

> Some people doubt that future generations would have any incentive to reanimate them… But it is worth observing that a significant percentage of people currently cryopreserved are the parents of cryonicists… The first persons to be reanimated will likely be the friends, spouses and parents of people who helped to cryopreserve them. Those

reanimated will have a strong incentive to reanimate their friends and loved-ones. A vast chain of human connections will drive the reanimation process.[84]

Anyone who has had more than a brief encounter with cryonics knows that the community is in a state of chronic disagreement, internal dispute, back-stage manipulations and general crisis. Cryonicists acknowledge this state of affairs and chalk it up to the "strong", "individualistic" and "idiosyncratic" personalities that the practice attracts. In view of this, my claims above might seem odd (though of course their oddity is partly a function of the idea that disputes are unhealthy or should not exist). Still, there is an actual community with a sense of co-existence and support that has been set up around this activity and against outsider hostility. That the cryonics community imagines itself and attempts to forge a sense of kinship was encapsulated for me at a training session, when a person who had come to Alcor for the first time ended up in a "group hug" with the older members. She said, "This is my family now." Another person responded, "It's the only family I have." And a third added, "The only family I have that's not dysfunctional!" Several ad hoc communal homes have sprouted up around Alcor, and to a lesser extent CI, housing cryonicists and immortalist researchers who live or work there as well as those who may be passing through. There are weekly dinners and occasional potlucks. Though growth is small, relatively few people drop out of their contracts and commitments. As lives are projected into the future, present-day disputes are overshadowed by commitments to the future, as well as its promises. Thus, on several occasions where members have come up short of the necessary finances, funds have been raised collectively to support the member's

[84] Quoted in his overview of cryonics on his website, last accessed Dec 1, 2010: http://www.benbest.com/cryonics/cryiss.html

cryopreservation despite disagreements with the person.[85] With or without older structures, continuity as a function of exchange between the present and the future ensures not just the future of a particular project but also suggests that today's daily efforts are not futile or useless – a strong need when lives are run around a speculative experiment.

That cryonics is considered to be an experiment is made abundantly clear on an official level all over Alcor and CI websites and in their published materials as well as in unofficial discussions. But the experiment nevertheless comes with its affirmations. An old quip attributed to the cryonicist and nanotechnologist Ralph Merkle has become a stock phrase: "Cryonics is an experiment. The control group is not doing so well." For most people, evidently, this is not a very convincing argument, since to them there is very little difference between how well the experimental or control groups are doing so far. For those who, optimistically projecting the abilities of future science, are convinced, being part of this experiment, as opposed to the control group (all *certainly* dead), is a badge of honor.

In fact, it seems to lend a sense of purpose to those who are signing up. They see themselves as "pioneers", a word often used to describe their venture. "Cryonics needs a Sputnik", and other first flight metaphors are also common refrains, ones that emphasise the experimental nature of cryonics as well as the conviction that if it all works out, this will be as big an achievement as humanity could hope for, immortality being a dream perhaps of longer standing than the dream of flight. There is that kind of exhilaration among cryonicists. To quote one excited informant: "This is an adventure. We're buying a dream." People who go into this, go into it with an expansive sense of possibility, with an explicit sense of "pioneering", a term

[85] I have also heard complaints about 'rich people' who don't contribute enough; or people who only give a little then "turn out to be millionaires".

used frequently in cryonics circles. A leading cryonicist told me: “I’ve felt often that even if it didn’t succeed I would want to be part of the team working on it, I wanted to join the people fighting the good fight, to make this work.”

“To make this work” requires people to commit their bodies and future lives to the endeavour. Many cryonicists believe that the current science is too incomplete to make for good reversible preservation, and the legal structure does not help the matter in so far as it does not allow cryonicists to euthanise themselves, that is, to coordinate their death in a timely and predictable manner such that preservation could proceed with the least possible amount of damage to the brain. Nevertheless, they have no regrets because they say that even if their chances are small at this point, they are contributing to furthering the ethos and techniques of cryonics, perhaps leading to the proper preservation of other people’s future lives. Giving their bodies in death to this experiment matters on its own merit, in producing something possibly more valuable than their particular lives and extensions of life.

Many cryonicists willingly admit that all sorts of mishap could befall them in the eventuality of re-animation: the first re-animations might produce heavily brain-damaged human beings. Be that as it may, they make this commitment. Their bodies, then, are being used to develop better protocols, better standards of care. That ethos of sacrifice to a great experiment is encapsulated in the common saying: “First in, Last out”, meaning that the later in the history of cryonics you are preserved the better the technology, the better your cryopreservaiton. Therefore the future will have an easier time of reviving you and so will choose to do so sooner than those who have had problematic cryopreservations. Opting for cryopreservation now, being amongst the “firsts”, is a way of helping the development of better techniques for future preservations, of giving your “life” to future cryonauts.

Knorr-Cetina has suggested, in the abstract, that "the biological sciences promise life as a creative accomplishment and constructive project " (Knorr Cetina 2005: 78). Cryonics promises death as a creative adventure and as a constructive experiment. In the words of one member, cryonicists have "join[ed] one of the greatest experiments possible in human existence." A molecular biologist who is also a cryonicist defined his commitment to cryonics as " an experiment I'm willing to take. Especially considering the alternative." Then he added, "But of course, it's a cool experiment." Many other immortalists echoed the same sentiment: "It'd be a fascinating adventure to wake up in the future and see how you'd have to adjust…" Death itself is opened up in this way beyond its secular finality, its deflating emptiness – it becomes an opening to an adventure, an occasion for a contribution to the realization of an age-old dream, a way of trying out something incredible, a technique of freedom that defies, in gesture for now, the tyrannical limits of death imposed by both biology and society.

Discussing his concept of the Risk Society, Ulrich Beck (1992) makes the point that the boundary between laboratory and society has been erased. Certain important developments cannot be tested until they are already part of society, or at least until after they are built – test-tube babies are one example. Cryonics fits this mold. It will be up to the science of the future to try reanimation, a prospect that will definitely be tempting. In the meantime, people are opting to suspend *themselves* in this present-day experiment and in so far as they themselves are the subjects of their own experiment, they take Do-It-Yourself science to another level: this is Do It *To* Yourself Science.

Techniques for the Future Self

In the production of the Immortalist's experimental self what stands out is the prescriptive (ideological?) mode of the exhortations as part and parcel of the obsessive engagement with the "techniques of the self". These prescriptions take different forms and appear in different fora, but two constants stand out: the absolute insistence on rationality, where being rational is a quality that is both valued and *performed*; the other is the preparations for both becoming and being a "future self". The effect is to prepare the person ethically towards the values of life extension and the promises of the future, shaping the new social subject that is The Immortalist. They are part of a series of recommended actions to take if you are to be a successful immortalist. The opening paragraph from an article bearing advice, titled somewhat tongue in cheek "Things to do with Your Body While You Wait for Immortality", offers an example:

> For those who would live longer, it's wise to face challenges every day, and put oneself in uncomfortable situations that require growth — physically, mentally, and emotionally. Part of the fun of being a transhumanist can involve measuring your progress across an increasing number of variables and seeing how improvement in one area can create unexpected and even synergistic progress in other areas. My advice would be to establish baselines and sophisticated objectives for strength, speed, endurance, stamina, balance, coordination, agility, skill (perhaps in a growing number of activities), days

> free of illness or injury, as well as body weight and, of course, the number of years spent being alive. Here are some of the tools to help achieve this.[86]

So emotional, mental and physical strength are to be charted informatically as measurable goals, optimization of the material body measured as an outline of "progress" in the "growth" of the self . The author then suggests a number of actual measures having to do with a variety of tests (eg Body Fat Analysis), nutritional intakes (the Supershake) and daily innovations in exercise (the Treadmill Desk, so that you can sit at the desk and exercise simultaneously). For each there are baseline measurements and therefore improvement goals to work towards. One is left to assume that by committing oneself to the goal of immortality, by working on the body with that in mind, will in itself affect the making of an experimental immortalist self.

The possibility of producing alternative ways of *being a self in the future* is, as KK, another transhumanist life extension researcher, told me, "a big motivation". Future selves would include people whose current capacities would be enhanced or optimized; as well as digital selves, operating simultaneously on a number of different substrates or networks, not confined to a particular material substrate and certainly not to naturally given limits of our current biological bodies. In a few cases, the "technology" is there already: for example, the common use of enhancement supplements, such as modanifil to enhance memory and cognitive function. For the most part, the technology is not there to achieve the most interesting of the imagined future selves. But even when the technology is not there, the excitement is, because based on certain precepts about information and mind, as well as about space travel, their potential is felt to be

[86] Lightman, Alex. 2009. "Things to do with Your Body While You Wait for Immortality", in H+ Magazine, June 19, 2009. Last accessed Nov 10, 2010 from http://www.hplusmagazine.com/articles/forever-young/things-do-your-body-while-you-wait-immortality

quite real. Organizations such as the Singularity Institute for Artificial Intelligence and Terasem are set up precisely to deal with and explore the implications, explicitly stating their goals to be the preparation of guidelines for changes that are coming in the future, including preparing for transformations of our present selves and our value systems (Joy, Growth and Choice, according to one book) and finding ways to provide "concrete guidance" to the issues we will face when our *selves* will have changed.

As the future becomes a way of organizing the present, expectation is turned into the ground of experience, turning the Immortalist into both a contemporary being and an already future being – "a current self" not just waiting but working towards becoming a "future being". The main transhumanist group, The World Transhumanist Association (WTA), explicitly considers "future beings" those "whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human."

In effect, a "future being" in the immortalist sense redefines the future just as it redefines the being. A future being is not just *any* being some distance away on the abstract linear timeline. It is a being with certain characteristics, first and foremost the characteristic of no longer being unambiguously human. In the more detailed transhumanist and immortalist imagination, the future being has the ability to cross species at will, building fins and gills or wings, say, into its molecular structure; it has the ability to "mind meld", that is, unite its subjectivity with others; it has the ability to travel at the speed of light and colonize space; it has superintelligent capabilities, which by definition are unimaginable by our sub-super abilities. Similarly, then, "the future" is not just any point ahead of us on the timeline, but a very specific point. In the abstract, it is that point at which things change enough to transform the human world and the limited way the world is known by humans; in the concrete, it is marked by the appearance of

specific technologies, mentioned above. Thus, the "future being" is not a being in the future, but a specific sort of being in the present, perched towards *that* future, anticipating *that* future, building *that* future in which biologically inherited human limits will have been overcome.

Moving from anticipation to desire, the WTA pamphlet adds that "many transhumanists wish to follow life paths which would require growing into posthuman persons" (WTA booklet, p. 13). It goes on to say, "At present, there is no manner by which any human can become a posthuman. This is the primary reason for the strong interest in life extension and cryonics among transhumanists. Those of us who live long enough to witness currently foreseeable technologies come to fruition may get the chance to become posthuman." And from desire to prescription: "Although there are no guarantees of success, there are some things that can be done…" It then lists five main actions a transhumanist might take:

1- Live healthily and avoid unnecessary risks

2- Sign up for cryonics

3- Keep abreast of current research and save some money so that you can afford future life-extension treatments when they become available

4- Support the development of transhuman technologies through donations, advocacy, investment or choosing a career in the field; work to make access more universal and to make the world safer from existential risks

5- Join others to help promote transhumanism

These points are taken seriously and reflect some of the practices of the self engaged in by many immortalists. In the contemporary biomedical context, the jurisdiction of biomedicine is no longer just that of illness, its aim not only that of returning a "pathological or problematic

individual to a fixed norm of civilized conduct [or good health] through a once-off program of normalization" (Rose 2003:58). Similarly, health and illness are no longer framed as the opposition of norm and pathology. Rather, "the extension of medical jurisdiction over health itself (in addition to illness, disease, and injury)" and the management of health and risk are key features of biomedicalization (Clarke et al. 2003). Much of the burden of management, however, falls on the "biological citizen" (Rose and Novas 2005). Biological citizens are persons who use biologically-colored discourse to describe and understand themselves and articulate their feelings; persons who understand their relationship to governance (either of the self or by the state) in terms of biological/medical obligations, engaging in a constant work of modulating and monitoring health and risk status, as well as individual capacities (Rose 2003); and create biosocial (Rabinow and Rose 2006) identities, that is collectivities organized around shared somatic or genetic status or concerns.

Immortalists do not share a specific genetic or medical status. But in so far as they are modulating and optimizing their individual capacities through the advances of biotech, and, even more, regard life itself as a series of biological deteriorations moving them towards death, they have constructed their shared biosocial identity on this pathologization of life and thus can be said to represent an extreme though logical extension of "biomedicalization". The constant assessment and management of risk and the optimization of somatic health have in themselves become the immortalist "form of life". The self-discipline and "self-techniques" (Rose 2003) in the immortalist community extend to their extreme ends the more general and mainstream strategies of the biological citizen. Immortalists engage heavily in personal research on life extension, exchanging notes on-line; they consult longevity specialists, or "life extension

doctors", and read books on how to extend health; they have developed intense supplement[87] and dietary regimens and frequently take "enhancement" drugs. Those who take their supplements seriously, often take upwards of 20 different supplements a day, amounting to 50-100 actual pills. Not, of course, all taken at the same time. Supplements need to be "timed correctly", as one woman told me during breakfast at an Artificial Intelligence conference. "Some need to be taken in the morning on an empty stomach, some should be taken at night, etc. I buy an 8-week supply at a time, six times a year." There are also on-line discussions regarding their benefits as well as notes on the optimum ways of ingesting the supplements. These are all based on observations made by users themselves who report on the effects of the quantity, combination and timing of the supplement ingestions. So just as with the cryopreserved body given to future science, here too Immortalists themselves are the experimental subjects of their own experiments – experiments on the self that are aimed in the final analysis at transcending not just the self but humanity and its limitations.

Another dietary regimen is calorie restriction. A practice sometimes referred to as the Neanderthal or caveman diet, calorie restriction as a means of extending healthy life goes back to research in the 1930s. In lab experiments with mice and worms, it has proven to be an extremely effective way of extending healthy life spans significantly above life spans in the wild. Members

[87] Supplements are favored for several reasons. First, they are unregulated and do not require prescriptions; indeed, they are often claimed to be ahead of the mainstream FDA-approved drugs and are often seen to be an alternative to the manipulations and lies of the pharmaceutical industry. For example, an on-line handbook from the Life Extension Foundation has a list of accomplishments cited in this vein: "In 1986, the Foundation recommended the drug ribavirin to treat lethal viral infections. It took twelve years for the FDA to approve ribavirin as a treatment for Hepatitis C. Hundreds of thousands of Americans died because the FDA denied Americans access to this broad-spectrum anti-viral medication." (Last accessed on November 10, 2010 from http://www.lifeextensionfoundation.org/accomplishments_01.htm) Second, they are historically linked to life extension, especially through one of the major suppliers, The Life Extension Foundation, which also publishes a magazine by that name. The founders are two long-time cryonicists who contribute large sums of money to cryonics organizations and research. Third, supplements tend to maintain or enhance aspects of well-being, rather than treat ailments. Thus there are claims about cognitive enhancement effects, such as improved memory.

of the immortalist community have been some of the early adopters of the calorie restriction regimen. Though not quite mainstream today, calorie restriction has garnered a lot of mainstream attention with reports on the practitioners appearing in major newspapers such as The New York Times and across all the television networks. Added to the dietary regimens are rarer forms of self-monitoring, either through lower tech methods for measuring the heart rate or higher tech and more expensive methods such as "bloodscoping", a method to visualize the variables affecting biological health, such as proteins, free radicals, etc. Not every immortalist adopts a life extension regimen. The variety of regimens (dietary or not) is less important than the fact that they are "techniques of the self" or mechanisms to effect and discipline the body and orient the mind, designating specific methods of measuring health, specific means of extending it - what some immortalists have been calling "Lifehacking", that is, the desire and ability to intervene into and transform life on a number of different material levels, through unofficial and experimental means. In short, immortalist selves are constructed and experienced as experimental in life as well as in death.

But sometimes the two appear to work against each other, as the avoidance of risk and the pathologization of life prompt extreme measures in some: there are immortalists who reinforce their cars to protect them in case of an accident; immortalists who drive with helmets on; immortalists who gave up their dreams of learning to fly or buying a motorcycle. Personal choices are reconsidered in *light* of the possibility of not dying and thus life's risks are evaluated very differently:

> Once you've accepted that it's worth your while to try and cheat death, then you think of all the range of possibilities. And you start to think about: are there ways to reduce personal risk in your life. I never used to think about this.

> Particularly as a teenager, I would do whatever, and there's a certain amount of thrill seeking and danger seeking that is normal in a guy, whether it's driving real fast or… there are a few things that could've killed me, that I did by choice. One interesting thing about this whole paradigm, is that once you get into it you start reconsidering your personal choices. Like I've always wanted to learn to fly, but I may not do that now…

So if there is a sense of adventure and experimentation on one level (death and beyond), there is also a concomitant reduction of experimentation and adventure on another (here and now). "Waiting for immortality" has impelled a series of risk-avoiding actions and behaviors. Risk is acceptable only if it is part of a scientific experiment on life itself, on biology – trying out new chemicals, new supplements, new procedures. The practices and discourses of life extension, focused through this constant vigilance, turn living into a pathology**.** Indeed, since death is now considered by immortalists as a "disease", or rather a host of diseases, then inevitably life, in so far as it is itself a process of decay, of moving towards death, becomes a state of disease too, a chronic disease of dying that is to be addressed early and with the same urgency as other conditions that kill off people. This can lead, perhaps not so paradoxically, to a very conservative approach to living life. Thus the experimental self of immortalists opens up a number of options and subjectivities whilst closing down others (Brown and Weber (2004) consider this exchange a defining feature of New Medical Technologies).

American Space-Time: Beginnings and Endings

The imagined futures forming around the possibility of turning death into life, of turning endings into beginnings, are new technologically-enabled reactions to the features of disenchantment. At the same time, they are wedded to old American ideals and rhetorics of pioneering, frontierism and atemporality. The American Frontier as conceived (while being eulogized) by Frederick Jackson Turner (1893/1920) was as much a concept in geographical space as one in social and psychological spaces. "American social development has been continually beginning over again on the frontier," wrote Turner, giving expression to a sense of American life outside of history, not subject to the passage of time. "This perennial rebirth, this fluidity of American life, this expansion westward with its new opportunities, its continuous touch with the simplicity of primitive society, furnish the forces dominating American character." His heir, James Truslow Adams, forty years later popularized the term "American Dream" by building a theory of it based on Turner's theory of the Frontier. In his seminal book, *The Epic of America (*1931), Adams described the American link between time and space thus: "There is never any past on the frontier, only a future, and one of the most radical changes which frontier mentality undergoes is precisely this complete shift of orientation in time. To dream solely of the future instead of the past…" By focusing on the concept of "the future", on time instead of space, Adams turned the American frontier into the American dream, inscribing Turner's "perennial rebirth" on to the "American character".

Because of secular finitude, the ideology of perennial rebirth, what Bellah called the entitlement to a second chance constitutive of the American dream, is in tension with the "midlife crises" and the "fading of the dream": rebirth will eventually face failure and death. Here, the indefinite temporality of scientific life extension erupts through in crisis – crisis in a double vein, both in Bellah's sense of the mid-life crisis, replete with failure and incompletion,

but also a crisis in Benjamin's historical sense, that is, a rupture in the linear, predictable, progress of time that can bring about a renewal. This in turn can generate a new kind of enthusiasm, not just regarding the specific practices or ideas of life extension or AI, but an enthusiasm towards life itself. Take Randy, a gay immortalist who is proud to call himself the world's first Cloning Activist. Since I met him in 2005, he has been active on all sorts of transhumanist fronts, reading, speaking to the press, organizing meetings, all in an excited and excitable manner. "For 29 years," he says, "I sold calculators and then light bulbs to conservative couples coming in to decorate their homes. I'm only beginning to live now. I'm vlogging. I'm active. I want to organize more and protest more. I want to raise some hell…" Randy is 71 years old.

For him, as for many others in the community, life extension has already become time extension, a way of countering the problem of the "workaday", of the routinization of daily life, of social aging and of reinventing a new life and a new self. Of catching up with time itself. The frontier continues to be an active trope in immortalist and futurist discourses, and not just for groups that project space colonization as the best option for the future. The pioneering ideal, which I mentioned earlier, is part of this discourse, one that becomes explicit in new experiments such as the Seasteading Institute, founded in 2008 by a transhumanist and immortalist "to establish permanent, autonomous ocean communities to enable experimentation and innovation with diverse social, political, and legal systems". At a conference organized by mainly by the institute, one of the founders spoke explicitly about establishing a new version of the frontier beyond territorial waters: "We need a frontier and we don't have one. Space *is* a frontier, but it is not realistic yet… Whenever we've had a frontier, humanity has flourished." The lesson and the commitment coincide with a long narrative thread in the American story: One life is a given; but

to realize the possibility of redemption other lives must be constantly invented.

There is another side to the existential anxieties and imaginaries of the immoralist movement, a darker more pessimistic side that also reflects a particularly American cultural motif: alongside the possibility of renewal there is always the fear of destruction. As the beginning of time (history) is eliminated, so one also comes to face the end of time (end of history). Just as we saw a conservative side emerge next to and due to the same causes as an experimental side in the development of immortalist lives, so here the optimism about the future bespeaks not just a pessimism about the present but also a bare existential fear about survival. Throughout this work, I have spoken of death not being one thing, and the idea that the fear of death is always the fear of a specific sort of death. Above I made the case that concerns about or fears of death in a secular reckoning have a very particular effect (in the absence of an afterlife) in terms of the experience of temporality of a lived life: an added anxiety about incomplete lives and a lack of purpose. These contemporary fears of metaphysical emptiness find content in end-time imaginaries that have to do with the potential annihilation of *everything*, the world, even the universe.

Undoubtedly, rampant millennialism throughout American history has affected the way end-times are imagined and related in the United States. But millennial end-times, despite their worldly chaos, are ultimately redemptive narratives. The elimination of time and history meant the ushering in of an eternity of paradisiacal existence. Through the 20th century, however, a particular sort of anxiety emerged about total annihilation without the possibility of redemption or rebirth, expressing a particularly secular sense of an end-time, evenmoreso since the very projections themselves have surfaced through scientific predictions. The first wide-scale manifestation of such a science-based end-time scenario was probably heat death, originally

postulated by a german physicist in 1854. Derived from the second law of thermodynamics, the theory of heat death suggested that all energy-dependent forms, especially life, will eventually cease to exist in the universe. In the context of modern, secular finitude heat death and entropy captured the imagination of the West. From from Kelvin to HG Wells to Bertrand Russell to Freud to many others, the tensions and anxieties brought on by heat death run "like a leitmotiv through turn-of-the-century cultural formations", as Katherine Hayles (1999:101) put it. Other science-generated end-time scenarios would follow. Collisions with vagrant asteroids, for example, which, as you might recall, was predominant in RT's narrative above: "Our galaxy is on a collision course with the andromeda galaxy and in roughly 300 to 500 million they will collide."

And there was, and is, the Nuclear bomb.

Indeed, besides Cargo Cults, no one has obsessed about the end-times more than Americans after The Bomb. The anthropologist Joseph Masco (2008), writing about ruination as a strategy of nation-building, observes that the intensive testing and 'civil defense' programs of the 50s turned the US into the most nuked country of the world, and created a citizenship disciplined around The Bomb, ready to respond to its threats and fears, and willing to use it when necessary. In effect, the civil defense program trained every citizen as a victim of nuclear holocaust, as a person forced to stare into the existential void of total annihilation. "From 1953 to 1961," writes Masco, "the yearly centerpiece of the civil defense program was a simulated nuclear attack on the United States directed by federal authorities. Cities were designated as victims of nuclear warfare, allowing civic leaders and politicians to lead theatrical evacuations of the city for television cameras, followed by media discussions of blast damage versus fire damage versus fallout, and the expected casualty rates if the attack had been "real". In 1955, for

example, the "Operation Alert" scenario involved 60 cities hit by a variety of atomic and hydrogen bombs, producing over 8 million instant deaths and another 8 million radiation victims over the coming weeks. It imagined 25 million homeless and fallout covering some 63,000 square miles of the United States. Each year Americans acted out their own incineration in this manner..."

After the bomb, then, it was no longer a millenarian exoticism to imagine, even *live*, the end of the world, to contemplate "one's own home and city devastated, on fire, and in ruins; it was a formidable public ritual—a core act of governance, technoscientific practice, and democratic participation."

In the aftermath of Hiroshima and Nagasaki and the widespread nuclear threat hovering over the world, the psychologist Robert Lifton (1987) made a case for the rise of nihilism as a response to visions and realities of nuclear annihilation, a sense of a *common destiny in destruction*, which he characterizes as *despair*, that is, a total end without redemption. The Bay of Pigs in 1961 had brought two superpowers to the brink of nuclear war and, partly in reaction to that incident, the Soviet Union broke a 4-year moratorium on nuclear testing in the fall of that year. Half a year later, the US resumed its tests as well and in a 7-month period detonated a total of 36 nuclear bombs. At the same time, the US had just started sending its first troops and advisors into Vietnam. The Cold War was, famously, threatening to become hot, triggering wide-spread apocalypticism in the US, that was as much a religious affair as a secular one, vigorously renewing the idea of the Armageddon on the one hand and on the other leading to various secular apocalyptic groups and media representations of the end-times (Lifton 1987; Wojcik 1997; Harding and Stewart 2003). Such visions of the end, of a rupture in time, had a documented

influence on the rise of new age movements and various "endist" tendencies, including renewed millenialism (Strozier 1994: 19).

The most common explanations for the surge of millennialism and end-time cults have viewed these as part of a crisis of meaning as a reaction to which people wanted to "escape the world". A different explanation is offered by Marvin Harris (1981) who acknowledges the proliferation of this crisis, but rather than attributing it to a crisis of meaning, contends that it was due to a disjuncture between the ideology of affluence and the reality of material problems, to the latter of which people were being promised solutions by a number of groups with a "definite program for mastering worldly problems". Harris' analysis ignores the fact that there were other programs offering worldly solutions, including social movements. So, even if members of the Jonestown cult were indeed beset with material problems, their choice of a solution is not fully explained. What is clear is that, as various billboards and cartoons proclaimed, the end was near, meaning that the nearness of the end had become more than just a joke, an allegory or a problem of personal death. It was near enough to take people over its edge. The least one could say is that death went from being an individual affair to a species-wide or global and civilizational concern – that is, in the context of "total war" (Elliot 1972), "survival" became a matter also of "total survival" rather than mere individual death.

Though Immortalism did inevitably get represented through the discourse of American individualism, it has always also developed through a concern with "total survival". My contention is borne out by the context in which the first immortalist narratives surfaced and by some of the subsequent history. The two original texts of cryonics – the first texts of the contemporary life extension movement – surfaced at the same time in part because they were products of a zeitgeist, synthesizing the cultural and scientific advances into an idea that had

older roots. This was the early 1960s, with America on the brink of great social and cultural upheaval, when radical change and revolution seemed in the offing on all fronts, from the political to the technological and scientific. It was a time when immense possibilities seemed open to the imagination, but also a time when existential threats seemed quite at the fore of national consciousness, pitting the optimism of technological progress against the pessimistic probability of total annihilation. There was a man on the moon, but down on earth, other men, having emerged from a world war, lived under the shadow of the mushroom cloud.

Both senses of the future – the moon and the mushroom cloud, immense potential to explore and to destroy – were present in the minds of the two first cryonics authors. In imagining the future, both Cooper's and Ettinger's books raise the possibility of devastating future wars, though they swiftly counter with a more or less utopian view that connects progress and rationality to some version of co-existence and peace. Ettinger was a soldier in war, as were a handful other early figures in the movement. The cultural context of the 50s and 60s was ripe for imagining existential threats, wide-scale destruction, and hence *generating a heightened emphasis on survival*, of which physical immortality would be the apotheosis of success.

Similarly, Max More, founder of the Extropy Institute and one of the founders of the transhumanist movement, told me: "For me it was a response to what was going on in the '70s, which was a very gloomy decade. Very high unemployment rate, inflation and fears of nuclear war… and I always rebelled against that. I was an optimist, I wanted something better."

The threat of toal annihilation – from peak oil, to nuclear terrorism to ecological disaster – is echoed through many immortalist narratives and has motivated groups and conferences organized around "existential threats". What is meant by existential threat here is not the same as what the existentialists might have meant by it. Rather, it refers to "bad futures" or dangers that

would threaten all of human or planetary existence. Terasem, a group that organizes annual conferences on legal aspects of a technological future, put together a meeting on the subject; the Future of Humanity Institute, set up by futurist philosopher and transhumanist, Nick Bostrom, at Oxford University, is dedicated to the study of large scale future threats to human existence; the Lifeboat Foundation, a non-profit organization connected to various AI, nanotechnology and Immortalism projects and figures, is entirely dedicated to researching "extinction risks" and developing "shields" against each, including BioShields, AsteroidShields and so on; and various blogs and listservs have had discussions on peak oil, climate threats, biological threats and other factors that could cause a global crisis of survival[88].

These are responses that indicate a high awareness and concern with the idea of total annihilation, of the end of human or intelligent life as such. These concerns have developed because serious threats have emerged, and because people are concerned about those threats. That, at least, is one part of the whole. There are at least two other parts to the concern I have described in this chapter. First, the existential concerns have been equally a product of the immortalist and transhumanist stance itself: in order to realize the dream of immortality, we must worry about and protect the future. Second, as I have suggested throughout, a particular way of imagining an end to the future, a concern with a purposeless expiration of the species and the universe itself, emerged through the development of scientific and secular thinking, dictated in part by linear time, by assessments of the history of the world, and of life on an infinite timeline, as well as by scientific theories themselves examining the dynamics of the universe. In part, then,

[88] Terasem, 4th Annual Workshop on GeoEthical Nanotechnology http://www.geonano2008.com/ (last accessed Sep 11, 2009); http://lifeboat.com/ex/programs (last accessed Sep 11, 2009); also see Anissimov, Michael. 2004. "Immortalist Utilitarianism". Accelerating Future Blog. http://www.acceleratingfuture.com/michael/works/immethics.htm (last accessed Sep 11, 2009)

the obsession with total annihilation has to do with this new two part sensibility, that this is all there is and it is under threat of extinction.

In an analysis of the similarities between certain economic and religious modes of long-term reckoning, Jane Guyer (2007) has criticized a contemporary temporality in which the near future, which she considers the space of a committed politics, is evacuated. The futurism of the immortalist movement does rely on a near-term gap. Immortalists have indeed tended to commit themselves to assessing and preparing for the risks and possibilities of the distant future: they analyze "low-probability, high impact" existential threats (an asteroid collision for example); they work towards the development of super-intelligent AI with the possibility of both saving and destroying humanity; they imagine a future in which biology is no longer a limitation, when minds can migrate from platform to patform, and throughout the universe; they prepare now for the nanotechnological reanimation of the cryopreserved. So in this way, Immortalism shares features with Guyer's millenialists and economic modelers who have all abandoned this true, pragmatic space of politics.

But I wonder whether this divide between near and distant futures is not too cleanly cleft. Would not long term future planning also have important political benefits, such as thinking about the climate, over-consumption, etc., of the sort Guyer would approve of? What is more, Guyer's stance begs the question of the long-term. It is well true that many immortalists, and especially Singularitarians, care little about what most people consider the urgent socio-political problems facing the world today. However, with the fast and unpredictable pace of social and technological development in a networked world, with widespread risk, the long term can become urgent very quickly for a large swathe of the population. It's not that I agree with immortalist and singularitarian politics regarding those long term problems, their assessments of

who might be affected or saved. I am simply suggesting that the long-term is not instrinsically counter-productive and, equally, that the near term can be myopic. The near and distant futures can both fold back into the present in fruitful, even pragmatic, ways.

Part of what I am arguing is that the future, long or short term, can not be thought about only as a function of abstract, linear time that would break it up in terms of nearness or farness. Rather, as the very idea of temporality suggests, there are many levels at which present and future fold into each other to determine a sense of urgency, a horizon for action and a set of dispositions, expectations and experiences. Christakis' (1999) study of medical end-life prognoses is a good example of a situation in which prediction is demanded, withheld or offered as a way of negotiating optimism and pessimism, a different sense of what is short term and what longer, and what may be considered urgent treatment and what not. As uncertainty over treatment increases, so the negotiation over prognoses increases in importance. There are many temporalities playing with our line of sight, shifting the horizon back and forth like a mirage. What's more, these temporalities cannot be understood as abstract relationships to time. The future is organized and calculated, made sensible and comprehensible, through a range of devices, materials and categories. I will address some of these in the Chapter 5, with a particular focus on promise and prediction.

Finally, the evacuation of the short-term can be made sense of in light of a secular sensibility towards radical finitude, in the face of total annihilation. In other words, the evacuation of the short-term is not exchanged for – the result of – a focus on the long-term; the obsession with the long-term itself may be an effect of the experience of radical finitude. Comparative analyses are useful, and certainly there is diffusion and fusion between religious and secular end-times, as Guyer and, before her, Harding and Stewart (2003) insist. But right

now the secular eschatologies are the predominant public ones, only emphasizing the sense of radical finitude. Secular disciplines and techno-scientific imaginaries are responsible for generating their own, independent future scenarios of *total annihilation*, without the possibility of salvation or redemption, and with the range of anxieties and responses that rise to meet them. The next two chapters explore some of these.

Chapter 4
Deathism:
From the Good Death to Death Is Good

Some time between the 1930s, when Alexis Carrell undertook his experiments in immortality and won a Nobel, and the 1990s, when Immortalism became a concerted movement involving a network of groups and the possibility of biotechnological extensions of life became a matter of public discussion, immortality research went from being a subject of scientific and popular excitement to a taboo science and an ethically unacceptable venture. Yet, modern culture in general and mainstream American culture in particular has the reputation of being optimistic, fostering a cult of youth and hope, placing the highest value on saving lives. For years, academics have been telling us that the whole jist of modern medicine, modern rational culture as a whole, is to deny the reality of death and try to prolong life at any cost, that the culture of control over nature views death as an affront, a defeat, that its final aim is to do away with death, even though it can't (Bauman 1992, Becker 1973, Elias 2001, Lock 2002, Jonas 1992). In his studies of Medical Examiners and CPR, Timmermans (1996, 2006) argues that American medical culture is dedicated to "an ethos of life", to any procedures or attempts that might prolong life, regardless of the cost, conditions or ultimately their efficacy. These claims seem to be borne out by the numbers: Out of a $2 trillion health budget (2006 figures) a disproportionate share goes to end of life care; 30% of Medicare expenditures go to 5% of dying people, and one third of all costs in the last year of life are actually spent in the very last month, and of that last-month expenditure 78% of it goes to acute care and life sustaining care (Zhang et al. 2009). In this same culture, research into radical life extension is frowned upon. At the heart of a "life-affirming" American culture in which apparently no effort is spared to keep people alive, where

all the motivations of vanity are harnessed as energy to maintain health and youthfulness in an $88 billion market (Weintraub 2010), there seems simultaneously to be an attachment to death – not to dying, but to death as such. How is this contradiction to be understood?

Paradoxically, it is in the light of radical finitude and total annihilation that we can make sense of the contradictions in the American obsession with the ethos of life, of procedures and attempts that might prolong life – by a few hours right at the end of it, or indefinitely and forever – regardless of the cost, conditions or ultimately their efficacy. The figures quoted above do not present a vision of the utilitarian efficient capitalist economy at work. Other things are going on.

Much of the distaste for Immortalism has been explained in terms of concerns about technological interventions into human nature and the unknown consequences of extending human lives. Others have criticized immortalist strategies as false promises not within reach of present day science. I wish to present a wider context that has specifically to do with the way in which the category of death and especially of the good death have been established as important cultural scripts in the midst of a secular crisis about life. I will begin by briefly outlining the general decline of enthusiasm for research on biological immortality, focusing specifically on the case of cryonics which, though at first embraced by scientists, was quickly pushed into exile outside the domains of legitimate science. This account of the creation of a "forbidden science" (Frickel et al 2010) confirms the tension, explored in the previous chapter, that arises when the boundaries of religious and secular categories are blurred and concepts that are thought to belong in one domain appear in, or are deployed against, the other.

I will then open up the lens again to outline a post-war cultural ethos that, in the aftermath of the disillusionments of WWII, developed the life-death regime we know as the "good death". Although the concept of and practices related to the good death were in part a

response to a historical condition – namely, the mechanization of death and the isolation of the dying – the whole project also developed into an ideology that reveals certain important limitations in the ability to assess and value life and death in a modern secular frame where intrinsic value is undetermined, where radical finitude and secular end-times form the backdrop of all deaths, and where the object of life or death – what we live and die for – has gotten obscured. It is through the assumptions and arguments of the good death ethos that a large segment of bioethics has raised its voice against any attempts at defeating death medically. The arguments and practices of the good death regime have created an ethical context that has provided the foundations for *anti*-anti-aging positions or anti-immortalist stances – in doing so, they have also ended up assuming an odd position, having to ultimately contend that "death is good", thus turning the "good death" regime into a "death is good" ethos.

Ultimately, I suggest that the crisis of the good life can be articulated as the inability to determine what it is good to die *for*. The ideology of the good death attempts to make life meaningful by ritually and rhetorically reconstructing that object for the dying person. Building on my previous chapters, I suggest that this condition is also a consequence of the elimination of the afterlife and the radical sense of finitude – of the nothing after – that transformed the experience of living and dying. This contributes to the existential dilemma of purpose: what is it good to live or die for? But the existential should not be dismissed as politically trivial. Whilst analyses of modern sovereignty have focused on killable subjects – ie who may be killed – an equally important task for any state is to reconstruct an image for its citizens and soldiers of what it is good to die for.

The Making of a Forbidden Science

The period after World War II was a turning point for public and political views of science. Firstly, medical science, meant to be harnessed for human good, for cures and remedies and health, had in fact been retooled for destruction. Eugenics had already been criticized, but its realization in Nazi ideology, concentration camps and medical experiments confirmed it as the ultimate evil. Understandably, anything that smacked vaguely of eugenics would be automatically discredited and marginalized. With their attempts to change human biology, certain biotechnological goals, especially anything to do with enhancement, have been framed as being eugenicist; life extension research is included in this category.

Secondly, the development of the atomic bomb, achieved by scientists through scientific research, and the use of scientists in the military project itself, also tainted the public image of science. Scientific advances were not supposed to lead us into Auschwitz and Hiroshima. As I will continue to argue throughout this chapter, World War II, ushering in an apocalyptic and dystopian imaginary, was an important turning point in the constitution of the current American regimes of life and death.

Finally, research into life extension was tainted by the faulty science of its early practicioners, most notably its most celebrated researcher, Carrell, who also was a eugenicist. As mentioned in chapter 1, Carrell's conclusions about immortal cells turned out to be experimentally flawed. Biologists had happily taken up the assumption that cell immortality was a fact and continued attempting to produce immortal cell lines – many of which of course just died away. When cell deaths were observed in labs repeating Carrell's experiments, they were attributed to bad technique or the use of toxic growth media, not to the mortality of the cells. This "sociology of mass delusion", as writer Stephen Hall (2003) calls it, held sway for almost half a century, through the 1950s. When Leonard Hayflick demonstrated in 1961 what he had

suspected for some time, that cells die after a set number of reproductions, the cell immortality myth foundered with much accompanying embarrassment in cell biology circles. Research into immortality turned into research into cell death and eventually the mechanisms of what came to be known as apoptosis or cell suicide.

The combination of these three factors helped transform public glorification, like that which earlier accompanied Carrell's experiments, into vilification. Life extension research would be labeled as unrealistic, unethical, selfish, dangerous, eugenicist and hubristic. Research into radically extended cell or organism lives would not recover until the 1990s, after the successes of biotechnology and genomics launched biology into a different orbit.

With this as background, I will now examine more local and specific ways in which cryonics was marginalized as "taboo science" (Frickel et al. 2010). The early experiments in cryobiology (see chapter 1) were enough to convince early cryonicists, especially Robert Ettinger, that suspending humans was in theory quite possible, the difference being a matter of complexity and scale, and not of principle. Indeed, once Ettinger put out his manuscript, it was enough to persuade one of the pioneering cryobiologists mentioned earlier, Jean Rostand, who contributed an optimistic preface to Ettinger's book *Prospects of Immortality.* Impressed by Ettinger's plan for human suspension, Rostand wrote, "we don't have long to wait before we shall know how to freeze the human organism without injuring it. When that happens, we shall have to replace cemeteries by dormitories, so that each of us may have the chance for immortality that the present state of knowledge seems to promise" (Rostand 1965:9).

Rostand was an exception in his unabashed enthusiasm but the budding field of cryobiology and transplant surgery did yield some cryonics advisors and advocates serving well into the 1970s, one of them even claiming that he is on his way to the full freezing and

reanimation of canines[89]. A few cryobiologists and transplant surgeons advised cryonics pioneers, and even served on cryonics organization boards, and at least one cryonics presentation was made at an annual Society for Cryobiology meeting. The first exchanges of letters with the Society for Cryobiology appear to have been cordial and warm. Later, some cryobiologists apparently accepted research grants from members of cryonics organizations.[90]

Over time, however, cryobiology's official position hardened into an outwardly and determinedly unreceptive stance. According to one account, by the 1970s, cryobiologists who were serving on cryonics scientific advisory boards had been "approached by one or more of their colleagues in the Society for Cryobiology and pressured to resign their positions."[91] By the 80s, on the heels of a series of cryonics PR disasters, there was open hostility against cryonics at the Society's annual gatherings. Mike Darwin, a leading cryonics pioneer and Alcor member, has called this a "Cold War" between cryobiology and cryonics, blaming the society for cryobiology for taking steps "to destroy cryonics".

In 1982, the Society for Cryobiology passed a new by-law (Section 2.04, Denial of Membership and Discipline of Members) explicitly denying membership to anyone engaged in "any practice or application of freezing deceased persons in anticipation of their reanimation" (the original by-law is reproduced in Darwin (1991), as well as in CI director Ben Best's on-line FAQ[92]; the current by-law, obtained from the Society itself, keeps the same wording but appears in a different section). The original proposal for the by-law, as reproduced fully in the Cryonics newsletter, was much more harshly worded, specifically citing cryonics and calling it a fraud[93].

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[89] For eg see, Cryonics newsletter of July 1981. http://www.alcor.org/cryonics/cryonics8107.txt
[90] See correspondence reproduced in, Darwin (1991).
[91] ibid.
[92] Last Accessed August 2 from http://www.benbest.com/cryonics/CryoFAQ.html#_IXC_.
[93] *Cryonics* (1983) "Society for Cryobiology -- The vote is in", January 1983.

But the most revealing aspect is part of the preamble to the proposed by-law presented to the Board. It sets up a familiar opposition between cryonics research and real science by placing cryonics into a religious domain, by classifying what it called "cadaver freezing" as "an exercise of faith, not of science".

Yet, based on the board's own descriptions it is hard to understand the difference between cryobiological research agendas and those of cryonics:

> The Board also recognizes that the goals of cryobiology include not only achieving an understanding of freezing injury and its avoidance but also applying this knowledge to the preservation of cells, tissues, organs, and organisms. A future achievement may well be successful mammalian cryopreservation. However complex the social consequences of such a development might be, this is no basis for discouraging research in cryobiology. The cryopreservation of biological systems remains a legitimate scientific endeavor which the Society for Cryobiology is chartered to support.
>
> Current understanding in cryobiology is at best fragmentary. Many cells and tissues are refractory to cryopreservation by the best available techniques. There is no confirmed report of successful cryopreservation of an intact animal organ. It can be stated unequivocally that mammalian cryopreservation cannot be achieved by current technology.
>
> Nonetheless, certain organizations and individuals are advocating that person be frozen subsequent to death on the premise that science may ultimately develop the capability both to reverse the injury of freezing and to revive the cadaver. The Board does not choose to involved itself in a

> discussion of the degree of remoteness of this possibility. The Board does, however, take the position that cadaver freezing is not science. Freezing and indefinitely storing a cadaver is not an experimental procedure from which anything can be learned. The knowledge necessary for the revival of whole animals following freezing and for reviving the dead will come not by freezing cadavers but from conscientious and patient research in cryobiology, biology, chemistry, and medicine. The sole motivation for freezing cadavers today is the remote hope on the part of individuals that this may be a means of avoiding death.

It concludes by stating that "The Board finds human cadaver freezing to be at this time a practice devoid of scientific or social value and inconsistent with the ethical and scientific standards of the Society. The Board recommends to the Society that membership be denied to organizations or individuals actively engaged in this practice."

How is it possible for a scientific society's board to claim that *"future successful mammalian cryopreservation"* is a "legitmate scientific endeavour", and at the same time assert that since "mammalian cryopreservation cannot be achieved by current technology", then research by cryonicists or any others into human cryopreservation is not scientific? If the logic is for the Society to simply stick to what it already knows is achievable by "current technology", then it should have recommended that cryobiology stop experimenting with organs taken from dead bodies as well. But logic is not what pushed the argument through. The argument is actually pushed through by several other assertions in the text: that cryonics is faith not science; that cryonics is a fraudulent activity because it accepts money; and that cryonics is simply a means

for individuals to avoid death. Each of these assertions appeals to a particular history. The first assertion, linking cryonics and faith, opposing them to science, plays into the history outlined in the previous chapter whereby immortality, death and related fields have been largely given over to the domain of religion. The second assertion plays on cryonics' history of PR disasters and the mishandling of cases. The third assertion, that cryonics is an attempt at "death denial", plays into the good death movement emerging at the time.

To trace the history of cryonics – or rather one of the histories of cryonics – is also to follow the ebb and flow of its status as both a social taboo and a taboo science, or what some scholars in STS have called "undone science" (Hess 2007; Frickel et al. 2010), referring to scientific research that is deliberately left out of the agenda and not done. This is different from ignorance of a field or the elimination of research topics or styles through scientific "dogma", or "dogmatic taboo", an example being the case of Carrell's immortal cells, mentioned in the introduction. With dogma, a particular result is accepted as universal fact and thus all contradictory results, even when obtained, are eliminated from the reckoning. Undone or taboo science is when a particular topic of research, the production of a particular kind of knowledge, is marginalized or sequestered. This happens due to a variety of factors. Especially in the era of private, rather than public funding, of research, the confluence of elite institutions and private interests determines what sorts of research is considered fundable or doable, and these often defend established markets, despite risk factors or better alternatives. For instance, over the past century, the chemical industry has repeatedly sidelined research into non-chlorine alternatives to chlorine use and production, despite documented (by some researchers) damages to the environment and health of people exposed to chlorine (Frickel et al 2010). Similarly, cancer research long side-lined inquiries into environmental causes of cancer (Gibbon 2007, Klawiter

2008). Social movements and public organizations often try to direct attention to these abandoned or tabooed areas, but at other times, it is the influence of social movements that determines the limits of scientific work and creates research taboos, as is the case with research on animals which has been limited by the animal rights movement, as well as stem cell research which was banned and/or limited thanks to a coalition of movements in the US.

In the case of cryonics, the Society for Cryobiology explicitly produced a taboo zone. Anyone conducting experiments that would be relevant to the freezing of deceased persons would have their membership suspended or denied. The precedent clause explains more. It would apply to members or applicants "engaged in or who promote any practice or application which the Board of Governors deems incompatible with the ethical and scientific standards of the Society or as misrepresenting the science of cryobiology". Cryonics was increasingly branded as a misrepresentation of scientific endeavours, and as ethically undesirable. In some exchanges, there were charges that cryonics was a fraudulent activity, not because it was conducting fraudulent research, but because it was charging money for something unproven (Darwin 1991).

Clearly, the mishandled cases of the early years and the public reputation of cryonics has had much to do with its sequestration. But organ transplantation was in a similar position in its early days, with many incredulous naysayers and appalled populations. In its later days, it was beset by numerous cases of fraud, lack of consent and abuse within established medical settings – from the gigantic case involving thousands of organ-stripped and discarded corpses at UCLA (Nelkin 1998) to organ black markets in the US and abroad (Scheper-Hughes 2000), to the trade between organ procurers and coroners for cornea removal and tissue extraction (Timmermans 2006:232-244). Although trading organs or tissue is a crime, the National Organ Transplantation

Act allows for a "handling and processing fee". Handling and processing has burgeoned into a $500 million a year tissue trade (Timmermans 2006:243).

Organ transplantation involves many of the same scientific, medical and cultural processes that are involved in cryonics, from the most general one of "redefining death" – successfully achieved, in the case of organ transplant – to the specifics of organ cryopreservation and transportation. Indeed, cryobiologists with long involvement in cryonics have developed what appears to be one of the more advanced and least toxic cryoprotectant solutions, M22, at a research lab called 21st Century Medicine (21CM), funded in part by cryonics advocates. M22 is currently being used in both mainstream organ preservation *and* for cryonic preservation at Alcor (Fahy et al 2004). Dr Greg Fahy, who has been interested in cryonics since his high school days, has been a strong bridge between cryonics and cryobiology. Additionally, over the years 21CM has developed a number of other products (ice-blocking agents for example) some of the research for which has been published in the journal *Cryobiology* (Wowk et al. 2000). Back in 1981, Fahy was also one of the first cryobiologists to offer "vitrification"[94] as a solution to the problem of ice formation[95]. Given the interests and backgrounds of the people involved, these products were in a very direct sense the results of *cryonics* research - which therefore can be said to have been making contributions to cryobiology at large and to general medical science by extension.

The legislative case in Arizona, explored earlier, further shows the legal and political affinities of organ transplantation and cryonics, whilst also underlining the boundaries that

[94] Vitrification means that a liquid descends directly to a solid state without forming ice crystals – ie it vitrifies or becomes like glass (for more see 'The Science of It' in Chapter 1).
[95] Darwin, Michael. 1981. A Report On The 18th Annual Meeting Of the Society For Cryobiology JUNE 14-18, 1981 St. Louis, Missouri. *Cryonics*. July 1981. Last accessed August 2 from http://www.alcor.org/cryonics/cryonics8107.txt

separates them. A legislative initiative in 2004 presented to the Arizona State house would affect both cryonics and organ transplantation. Lobbyists for both collaborated in defeating the bill, but the reaction to organ transplantation and to cryonics was vastly different. Alcor's lobbyist told me that there were a number of senators as well as testifying experts "who questioned, who were academic snobs, and unless we [cryonicists] were published in academic journals, you know, that they were aware of, or something like that, then we could not really be engaged in research, you know. I had one guy who was a legislator, who was an instructor down at the U of A, you know, he had that reason." His logic here was not so much to argue that cryonics will revive humans for certain, but that research into the processes is legitimate science:

> There's still a bias by scientists about the validity of the thesis, that you can at some point in time, in the future, be resuscitated. Now, if you sit down and have a conversation which is what's so compelling to me and I'm one of those lobbyists who I, I have to believe in what my client is doing. I don't, I think you're a bunch of crackpots but if you give me money I'll lobby for you, I can't do that, I sleep better at night the other way. When you think about what cryonics means, both in the short term and the long term, if our research that we're doing on vitrification is successful and we know how to preserve and vitrify the biological viability of tissues, that could be used for transplant. Think of what medical science has been given now. There are kidneys and hearts and livers that go unused because you can't find a match. Now if you could vitrify them and save them for the future, why wouldn't you want to do that?

This raises several questions: what constitutes research into cryonics? Is it a separate field entirely? If research by cryonicists has contributed to organ transplantation protocols, how is one

to classify cryonics research apart from cryobiological research? The problem of that boundary is larger than the specific one between organ transplantion and cryonics. A majority of the intermediary phases, before re-animation - such as perfusion of the body, the use of appropriate cryoprotectants, the circulation of oxygen, the use of ice baths, the problems of cell death and ice formation, the technology of storage tanks and maintenance - are in fact problems and procedures shared by many fields of science and medicine. The idea that the cold could help preserve life has recently altered many emergency room procedures and started an entirely new area of medical research at institutes such as the University of Pennsylvania's Center for Resuscitation Science where studies into hypothermia as a technique in emergency and critical care medicine are well underway.

On at least one recent occasion during my fieldwork, cryonics organizations approached a university to collaborate on a research agenda funded by cryonicists themselves. The program would examine some aspect of research relevant to cryonics and would be a part of existing departments and not a separate program on cryonics. Though the university began the conversation, it also ended it relatively quickly. Uncharacteristically, they turned down the offer of money. A non-cryonicist advocate involved in the negotiations claims, "I found out that they turned us down because a couple of professors that they talked to did not want to be associated with cryonics because they don't think that it's real science, and I think that that's a shame. I always heard that university campuses were a place where real research can be done regardless how crazy the idea is but I'm wrong. I know that."

On the level of research and professional development, the ban on cryonics by the Society for Cryobiology has had an undeniably detrimental impact on cryonics. For example, when the real function behind the extra-large storage tanks made by the dewar manufacturer

MVE Labs for Alcor was discovered, the company, whose main clientele was cryobiology companies and researchers, discontinued their work with Alcor. According, to some cryonicists, MVE was also pressured into this by threats from the Society for Cryobiology. Alcor eventually found another supplier[96]. Perhaps more importantly, cryobiologists have stayed away from cryonics and cryonicists. Two rising cryobiologists who have made contributions to the field and are also avid cryonicists have deliberately maintained a *public* distance from their cryonics activities for fear of jeopardizing the credibility of their lab-based cryobiology research.[97] The role of professional societies and associations in legitimizing and authorizing the parameters of research for a given field is crucial. By calling cryopreservation "cadaver freezing" and banning any interested researcher from the Society for Cryobiology, the society has managed to alienate the professional association and scientific field closest to cryonics research, and delegitmize cryonics in toto, including research that could help the field of cryobiology itself.

Perhaps the most damning part of the strategy has been to portrary cryonics as a matter of faith in the field of science. Delegitimising cryonics as a project of faith rather than science keeps away not just cryobiologists but scientists in general. According to the estimate of one scientist who is a member of a cryonics organization and who likes to keep track of such matters, there are only about 20 working scientists who are members of that organization.

The case of cryonics and the Society for Cryobiology is a particular, and only somewhat exaggerated, instance of a more general attitude towards life extension research. Whilst anti-

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[96] While Alcor has opted for professionally constructed dewars purchased from a corporation, CI builds its own units, both because it is more cost effective and because it claims that the design of the vacuum chamber is more robust and less prone to damage in case of impact. For this, CI has done its own materials research, for example conducting experiments on the thermal properties of coating resins to create better insulation. For details see http://www.cryonics.org/cryostats.html.

[97] According to cryonicists who have attended recent meetings of the Society of Cryobiology, the hostility is waning and to their surprise a few are even open to scientific discussions on the matter. But the by-law still stands.

aging research is a multi-billion dollar industry, paradoxically research into the postponement and defeat of death is frowned upon. It is not one particular scientific society that has reacted in this way, but a whole network of ethicists, professionals, organizations, and media. Part of what informs this broad cultural orientation is the spread of the "good death" regime after WWII and Vietnam, culminating in a widely-held position that effectively embraces the idea that death is good.

Deathism and the Virtues of Mortality

I meet the hospice worker at Burger Heaven in Manhattan. Neither of us was into burgers, but Heaven seemed close enough to our themes. In her 50s, tall and blond, she arrived wearing a trim, tailored black suit appropriate for a mid-town power lunch, but looked perfectly at ease in the diner. For years, she was deeply involved in various end-of-life coalitions and hospices, and had organized academic seminars on death. I wanted to know what she knew about cryonics and the growing mobilization around immortality in the US. She asked about my research. I mentioned some of the cryonics organizations, the nanotechnology developments and claims, the prospects for scientific immortality.

"So your wider interest," she explained to me immediately, "is the culture of death denial. That is what cryonics is."

"What exactly do you mean by the culture of death denial?" I inquired.

"Mainstream American culture deals with death, typically, like in the suburbs: you hear someone has died, you say something quickly and uncomfortably. In the suburbs, if it's your neighbor, you take them a dish of food. There is a general discomfort. Then two weeks later we wonder why the person, the bereaved, isn't together. Move on! we say. From a productivity point

of view it's very good. In two weeks you're back, doing your sales and marketing. People are resilient, you know. People survive quite well.

"It's particularly the case in the New York area. It's the youth culture. People just don't die! It's expensive and unproductive and messy and not aesthetic, the way Britney Spears is aesthetic."

"What if there really was a chance?" I asked, explaining some of the science that immortalists claim makes cryonics plausible, even if it's only a slim chance.

"It's an absurd hope," she waved it off.

"All hope is on some level absurd," I say.

"No! Hope is a major engine. Hope is not absurd."

Involved in End-Of-Life activism, she navigates the terrain of hope daily. The goal of the hospice movement and end-of-life coalitions is to allow people to *not* fight death, and rather than focusing their hopes on staying alive at any cost, in pain, through machines and invasive procedures, they try to provide them with a different kind of hope, the hope of having joy with the family, having, as she put it, "one more opportunity to choose, to do something."

This approach defines hope in a particular way, as active though short-term involvement in life at its very end, one last opportunity to exercise choice, as though choosing were its own reward, the embodiment of the supreme American ideal of choice as life's final statement. It did not seem to me to make hope any less of an illusion, but only a momentary stay against a larger despair, a denial of death's involuntary uncontrollable nature through a few final little acts of choosing.

"Perhaps cryonicists are also doing that," I suggested. "Perhaps it could be seen as another way to die for now filled with hope, to go into death calmly and joyfully, and therefore to die the good death, in your terms, with dignity."

"Perhaps," she said doubtfully. "Perhaps." And then she had to go, she was late for a death seminar.

Not long after, I met with a young mortician who, after a tour of the funeral home in an urban center in the Midwest, took me to lunch at the Mexican restaurant next door, and responded to cryonics in a similar manner, though she was much more familiar with it. She had started out working in hospice, dealing with bereavement and end of life issues, but decided to become a funeral director and got her degree in mortuary science. She taught college-level classes on death and dying, and worked at a funeral home that did regular cryonics work (funeral homes and morticians are often involved in the cryonics process for a number of reasons described in chapter 1).

The book she studied in school, and the book she uses to teach, is called *The Psychosocial Aspects of Death and Dying* (Canine 1996), a common textbook for funeral directors that basically goes through what are now the generally accepted Kubler-Rossian steps or stages of bereavement, and teaches morticians how to counsel both the dying and the bereaved, past denial towards an acceptance of death. While designating this path towards acceptance, it also maintains that personal choices are paramount and must be respected. Although the mortician thought that working on cryonics cases is fine because it is the person's choice in dying and that choice must be respected, she also criticised it as a form of death denial.

"It's basically people using denial to put off the fact that we are mortal beings," she explained.

"So why is death being denied?" I asked.

"Because it's so uncontrollable and so threatening to our personhood. We can only talk about it in abstract ways, like in cartoons… The way we push it away is by denying that it's going to happen. Creating the belief systems that include heaven or the afterlife and somehow reuniting with the deceased after death is a way to deny the reality of death because it's like saying, 'Well yeah they're dead but we're going to see them again so it's ok.' I think Cryonics is a parallel to that because it says, 'yeah, they're dead but maybe we can bring them alive again one day and see them again.' So it's denying the full reality. Yes, you can accept the fact that your relationship to them is no longer the same as it was when they were alive, you can no longer go and hug them and be with them here and now and you can't call them up tomorrow because they're not there. But it is denying the *full* reality of it: unless there is a heaven, unless we can wake them up after they're frozen, we probably won't ever see them again. Most human minds can't really grasp that. It's like the size of the universe, most human minds can't grasp the size of the universe or the permanence of death."

"And what would not denying death look like?" I ask her.

"Fully embracing death as an end."

"Is that a prescription? Does *that* mean you have accepted it *more*?"

"Well, I don't know but you see it all the time in the funerals: 'we'll see them again' or 'isn't it great that mom and dad are united again'. I think there is something death denying about that. It is denying the finality of death. It just seems to me that as long as you are focusing on the reunification later on, you are not focusing on the reality of death now."

"Do you think revival as such is a possibility?"

"Maybe. Yeah sure. Very possibly they could revive you. Why would they want to? There's brain damage that could occur…. And why would you want to come back when everyone you knew is gone!? Would you like to wake up and deal with that profound grief? My wife is gone, my children are gone…"

"Yes, but what about new people you'd meet? The excitement of starting over?"

"Hmmm, I never thought about that. I guess I think of my life in terms of the past as opposed to the future. People I've already grown to be a part of, as opposed to people I'd be a part of in the future…"

For the sort of negative attitude articulated by the hospice worker and mortician towards the quest for indefinite lifespans, immortalists have a term of their own. They call it "Deathism". Rather than a death denying culture, this, they say, is a "deathist culture", conditioning us to accept death, even deem it necessary or good. For thousands of years, humans have gotten accustomed to death as a fact, a biological inevitability. As a result, humans have adopted a wide range of views of and justifications for death and dying, which effectively turn death into something that must by default be *acceptable* if not actually good. This is considered "a lazy attitude" by many in the radical life extension community, because it merely brushes aside the possibilities of radical life extension without any serious effort towards rigorous research, and neglects their scientific evidence as well as moral arguments. The founder of the Fight Aging! blog and editor of the Longevity Meme newsletter, who goes by the on-line handle Reason, calls all this "learned deathism"[98].

[98] Reason. 2007. "A Letter to Casual Deathists", in *Longevity Meme Newsletter*. October 22, 2007. http://www.fightaging.org/archives/000151.php

There is no definitive definition of "deathism" but the overall usage is quite consistent in the writings and conversations of immortalists. The writer and cryonicist Mike Perry defines it as the claim "that not only is one's eventual demise inevitable and final… but that this should be seen in a positive light"; the Wikipedia entry, initiated and edited by members of the Immortality Institute forum, posits deathism as the claim that "death (the cessation of physical living)… is both desirable and good"; in the Immortality Institute video "Exploring Life Extension", deathism is defined as "a longing for eventual death"; the longevity activist and researcher, and director of the SENS Foundation, Aubrey de Grey, talks about it in more extreme terms as a "collective hypnosis". [99]

Given that the immortalist quest is consistently vilified or merely criticised as being illusory and strange, and of course classically death-denying, some of this talk of "deathism" is clearly a rhetorical parry, a label affixed for discursive advantage and moral finger pointing, a "folk" anthropology of the "other side", without much deliberation, research or analysis. But beneath its rhetoric it does point to a general condition.

Right after it launched in March of 2003, Sage Crossroads, the now well-respected online forum "for emerging issues of human aging" which aims to balance the advancements of science with public interest, webcast a discussion between Gregory Stock and Bill McKibben. Gregory Stock is the optimistic director of the Program on Medicine, Technology, and Society at UCLA's School of Medicine. Bill McKibben is a progressive environmental activist and writer who left his big city job as staff writer for the New Yorker to retreat to the mountains of upstate New

[99] Perry, Mike. 2004. Deconstructing Deathism: Answering a Recent Critique and Other Objections to Immortality. *Physical Immortality.* Vol 2(4) pp 11-16.
"Deathism", Wikipedia. http://en.wikipedia.org/wiki/User:B0gger/Deathism#cite_note-0. (Last accessed Nov 6, 2009.)
De Grey, Aubrey. "Why Fight Aging?", presented at the Understanding Aging conference, UCLA, June 2008.

York where he has written about global warming, local economies, human population growth, and biotechnology. Both McKibben and Stock had just published widely-reviewed books. As one can immediately tell by their titles, McKibben's *Enough: Staying Human in an Engineered Age* and Stock's *Redesigning Humans: Our Inevitable Genetic Future* approached the same topic from opposite directions.

One might start, however, with the one point on which both sides seemed to agree. Advances in medical science, particularly biotechnology, are heady, foaming with enormous potential to find cures and create new ways of changing the body's capacities. No one is denying that biotechnology, nanotechnology, information technology and genetics are poised to achieve unprecedented control over aspects of the body. Fighting and winning the fight against specific age-related diseases or even aging as a whole does not seem improbable to many of the critics. And that's just the problem.

In the SAGE debate, Bill McKibben stated that there can be no quibble when it comes to curing something like cancer. "Those things that would treat diseases to which we now fall victim and that would attempt to make us healthier through what is now the normal course of human life hold no problems for me" (Sage Crossroads 2003, p 6). Notice the word "normal". At some point, defeating a disease and controlling a particular aspect of the body will imply something beyond that specific, local achievement, beyond the "normal". At some point, winning the fight against diseases and the ailments of aging – if the fight is won – will imply a radical change, an extension of lifespans to the point that death as a general inevitability will be effectively and at will forestalled. Foreseeing this, McKibben makes a distinction between treating disease and "abolishing death". The latter, he contends, "will be the most fundamental shift imaginable in the course of human history. It will not be a small extension of some other

thing; it's not like developing a treatment for Alzheimer's or some other condition, it's something of an entirely different order. We call ourselves mortals for good reason…"

"Mortals for good reason" is just the kind of statement which to immortalists reeks of deathism, because McKibben is not ultimately arguing that "we *call* ourselves mortals for good reason", in the sense that it is true thus far that we have had good reason to *call* ourselves mortal since every human ever born has physically expired, or died, regardless of what might have happened to them after that. Rather, McKibben's argument in effect contends that "we *are* mortals for good reason". McKibben does not argue that abolishing death is a bio-tech pipe dream. He says that we oughtn't do it even if we can. There are things about being mortal that are good in themselves, of intrinsic or essential value. One of them is that death gives meaning to *human* lives. "If the day comes when we can ensure some kind of immortality… with that shift will come, I think, a kind of meaninglessness." He adds that "our own knowledge of our transience… leads us in some ways to grow up, to not put ourselves at the center of the universe forever. In its wake it leaves, I think, a kind of pervasive selfishness" (Mc Kibben 2003).

McKibben is not alone. These are common responses to the immortalist quest – that it will make life meaningless, childish, selfish and transform humans beyond recognition. The Sage debate was called "Do We Want Science to Reinvent Human Aging?" but the moderator Morton Kondracke presciently introduced the topic by suggesting that "the informal title of the debate might be, 'Do We Want Science to Reinvent Human Beings?'" (Sage Crossroads, 2003:2). The science of ministering to human aging was being recast as something much more portentous than treating degenerative diseases or extending health access in order to increase life expectancy. Whereas once dealing with the effects of aging was an indisputable good, a medical necessity that simply helped human beings survive, now fighting aging was appearing not just as a topic

for scientific discussion, but as a controversial line of exploration entailing nothing less than a complete transformation of being human.

At around the same time – which was also when the MIT Tech Review debacle was unfolding around Aubrey de Grey's SENS project (see chapter 1) – the bioethicist and then-director of the President's Council on Bioethics, Leon Kass, accepting that the indefinite postponement of death may well be a scientific possibility, argued, in an important paper on the subject, against its desirability by enumerating four distinct ways in which death is good for us humans. Death, he argued, gives human lives 1/ interest and engagement; 2/ seriousness and aspiration; 3/ beauty and love; 4/ virtue and moral excellence (Kass 2005). Without death and the prospect of death, our actions could not be qualified in terms of any of these virtues. And without these "virtues of mortality", Kass maintained, we would lose our "humanity".

Criticism of immortalist projects continue to be issued along the same lines (Gems 2003). Jonas (1992), Daniel Callahan (2003), Francis Fukuyama (1992), Jurgen Habremas (2003) and others have all made similar claims on behalf of natural life span limits and mortality. It might bear repeating that those defending what immortalists might call a deathist position cross traditional political lines: amongst them figure a Christian conservative, a non-religious conservative, a left-leaning European philosopher and an American-style progressive; but on this matter they are all bedfellows.

It's important to note that their arguments are not about end of life decisions such as euthanasia or medical futility. Rather, they assume a metaphysical position about death, arguing that death is either ultimately necessary or desirable, and often both.

The Good Death Turned Into Death Is Good

Generally these topics are debated through an analytic approach, which by force would be speculative since we are for now mortals. Such discussions focus on whether death is really a necessary pre-condition for a virtue such as love or heroism, whether self-sacrifice will have any sense in a deathless society, whether a long life would necessarily reduce motivation and creativity, whether it is death that makes some of our acts heroic or noble and so on. For my part, I cannot see how our acts of courage and heroism, our deep love, our ability to make good art, or our moral excellence depend on dying; they seem to depend as much on youth, for instance. Besides, I can imagine and have witnessed many occasions of heroism and love and creativity and moral excellence *without* the threat of death. The existence of those virtues are not explained away by reference to some external factor, or at least not fully. More than anything it seems, their existence depends on the cultivation of those very virtues themselves. If those virtues have been linked to death in a particular culture, then that may be the culture's particular way of cultivating those virtues.

The virtues listed by Kass coincide largely with the virtues that are generally said to have come under threat in modern life itself. So the virtues that, according to Kass, depend on death are already thought to be threatened. In other words, those virtues, rather than being threatened by deathlessness, are getting eroded in a world that, in 50 years of death awareness programs and publications, has, if anything, heightened its awareness of death. So Kass-like arguments depend on an inversion – using the specter of the future to support values that are felt to be under threat today. This sort of inversion, as we'll see, is common in these debates.

At any rate, my intention here is not to engage in analytical arguments but rather to investigate what social conditions and cultural categories have made a particular contradiction possible. That is, I want to explore in what sense and in which contexts, through what practices

and by which scripts, the extension of life is made culturally unacceptable and inappropriate in a particular life-death regime that otherwise appears to hold up an "ethos of life". To reformulate a question asked by the ethicist Robert Veatch (1989): how and why is it possible to affirm simultaneously that death is an evil and that certain deaths ought to be accepted, even desired?

The explicit "death is good" position has surfaced strongly in recent public discourse in direct reaction to biotechnology in general, and not just the technological quest for radical life extension (eg see Veatch's *Death, Dying and the Biological Revolution* (1989)). The Fukuyamas and Mckibbens were not previously so concerned with the theatre of our mortality. In fact, many of them are arguing more generally about the effects of bio and nanotechnology on human beings, human society and human values; Immortalism, gained through technological and scientific means, is one part of this larger picture. This is important to recognize because the debate in this case is influenced by other debates and positions on the role of technology in relation to *human* bodies, lives and identities, as well as the role of technology in relation to *social* bodies, ie. in terms of distributive justice.

At the same time, there is no doubt that the "death is good" position did not simply flower out of nowhere in sudden reaction to the new medical and biotechnological possibilities. Indeed, the sort of affront that the immortalist quest seems to be presenting to its detractors – the kind of change that is said will deform humans beyond recognition – indicates that there was some pre-existing attachments or commitments that were being affronted, and that other culturally acceptable scripts about dying were being disrupted.

Hastings Center scholar Daniel Callahan's book, *What Price Better Health?* (2003), helps us understand which prior commitments are being disrupted. Whilst his book is in fact not openly about advanced biotechnologies and the immortalist quest, he has aligned himself closely

with the anti-immortalist camp and stance, and has served as advisor on the President's Council on Bioethics next to Kass. Callahan, an influential figure in bioethics debates who advises the Center for Disease Control and is an elected member of the National Academy of Sciences' Institute of Medicine,[100] is not arguing directly against the practices of Immortalism or radical life extension. He is writing about the general approach to medical research and clinical practice. Yet he extrapolates from one – the attempt to defeat disease – to the other – the quest to defeat aging and death.

He begins with the contention that the "underlying logic" of medical research implies the conquest of death. "[I]f it is the aim of research to eliminate all the known causes of death, then it would seem that the ultimate enemy must be death itself, the final outcome of that effort." Therefore, he concludes, "it is not too far-fetched to say that the most important war conducted by modern medicine is the war against death."

This is a common but crucial point of slippage (also see Kaufman 2005:80). Medicine's attempts to intervene technically and causally into the diseases and conditions that are responsible for the demise of the body are extrapolated to signify a larger quest for the eradication of death. Whether that is a logical or empirical truth may be disputed, but that is not the end point of the argument. The argument then uses the futility of the fight against the particular diseases that bring on death to argue against the general, abstract case of the eradication of death itself. This generalization is a mistake because the eradication of a disease, or a host of diseases, has its own context and dynamics that may not be applicable to a situation in which death as such has been already eliminated by a variety of putative means. The actual

[100] For a full bio see the Hastings Center website: http://www.thehastingscenter.org/About/Staff/Detail.aspx?id=1282 (last accessed November 10, 2009)

fight against a disease or a host of diseases is not *identical* to the fight against "death", especially given the range of ways and contexts in which we die and the vast number of concepts and categories that shape our responses to particular deaths. For a range of reasons, it may make sense at some point in the treatment of dementia or cancer, say, to suggest that we allow an easeful and painless death to come about without more "curative" interventions that are "futile". That is the core of the palliative argument: reduce pain but allow death to take its course. However, that local, end-of-life context in which pain and pain relief are weighed against beneficial or futile interventions does not apply to a situation, hypothetical as it might be, in which death is forestalled altogether in a relatively healthy person. One would not say to a person without a *terminal* disease, and to their relatives: accept death, take lots of pain medication and let's just ease into death. My point for now is that the ideal of "accepting death" may at best apply to the case of a person on his or her death bed, but cannot apply in anything like the same way where a disease-ravaged body is not at stake. In principle, there can be an important difference.

But let's accept Callahan's premise for the sake of argument. Let's say that the ultimate purpose of medicine is to eradicate death and further grant that in some other way the case for the eradication of disease and that for the eradication of death may be identical. Why, then, should medicine not "chase immortality"?

Callahan starts by admitting that on some level, this is a natural tendency because "Death has been feared and resisted and fought, and that seems a perfectly sensible response." Yet, he suddenly claims, that does not imply that *medicine* should look upon death in the same way, as "the permanent enemy". "Death is, after all, a fact of biological existence and, since humans are at least organic, biological creatures, it might seem evident that it needs to be accepted. Death is

just there, built into us, waiting only for the conditions necessary for it to declare and express itself. Why, then, should medicine treat it as an enemy, particularly a medicine that works so hard to understand how the body works and how it relates to the rest of nature?" Medicine, a human activity, in effect a human intervention into human life, is thus exempted from the supposedly natural human tendency to fight death for the circular reason that medicine is charged with the exceptional duty of understanding the human body and its relationship to the natural. To defend a position against the dehumanization of medicine, he ends up tasking medicine with an incompassionate, objective gaze removed from the subjective desires of this organic creature.

What's more, medicine's exceptional duty of understanding the human body and its relationship to the natural, *must* accept death as the most natural thing: "a biological fact of existence". But a biological fact is not an ontological one (Marcuse 1959). Life spans have been hugely extended in several organisms; and certain cells appear to be "immortal". Biology is malleable and potentially changeable; ontology is not. Callahan commits a common form of the naturalistic fallacy, in which he takes what seems to be given by nature as something that must be absolute and desirable. Yet, he is also selective about which natural aspects must be accepted as fact, and which may be struggled over. After all, disease is also a fact of biological existence.

But Callahan also has practical reasons for suggesting that the eradication of death is not good: "Not only is eradication of death an unattainable goal, it also promotes the idea among the public and physicians that death represents a failure of medicine, one that research will eventually overcome." The research imperative has affected clinical practice, he claims, because it makes clinicians in end of life care focus on one more heroic effort to extend life instead of easing the patient into peaceful death. Yet, he says, decades of research into end of life care have found that "a peaceful death *requires an acceptance of death* (italics mine) by both physician

and patient. The acceptance may be affirming or grudging or simply acquiescent, but it *has* (italics mine) to be there. Death just is and must be given its due" (Callahan 2003: Chapter 3). Note the imperatives (required, must be…) and the circularity (to die peacefully you must accept death because peaceful death is one in which death is accepted).

The heroic effort to save lives, as he points out, has the additional disadvantage of being costly. The difficulties, both philosophical and practical, of drawing a clear line that separates good care from futile care, technological death vs natural death, or "inappropriate death vs unnatural longevity", have long been outlined and debated with little consensus on the matter (Scheiderman and Jecker 1995; Lanier 2005). Even as Callahan acknowledges the problems with futility, he presents the notion of "peaceful death" as though it were a non-contingent, universally applicable mode of dying, standing opposed to an unnatural, unpeaceful, technologically extended life. So one of his key recommendations is to "*Persuade* [italics mine] clinicians that the ideal of helping a patient achieve a peaceful death is as important an ideal as that of averting a patient's death."

In addition, he goes on to present a moral argument. An eternally long life would be "boring", so boring that it would be meaningless: "…simply extending life is no guarantee that the good we now find in life, at younger ages, would continue indefinitely into the future." Indeed, "even under the best prospects, there would be hazards, physical and mental, to be run for a prize that might hardly be worth winning." He concludes that "while it makes sense for medicine to combat some causes and forms of death, it makes no sense to consider death as such the enemy." Medicine should not be "chasing immortality". The problem this raises in his view, is that "chasing immortality" displaces the meaning of death. "At the heart of modern medicine is an important though implicit schism about the place and meaning of death in human life."

Invoking "meaning" along with "acceptance" has become an important trope in all arguments against life extension, one that has been imported, as Callahan himself admits, from decades of research and activism around the concept of and practices built upon the concept of the good death.

If *persuading* or *requiring* people to help achieve a peaceful death sounds like a program, a goal for a life-death regime, it's because it is. It is generally known as the Good Death and from Callahan's quiet shift from the importance of "death acceptance" to the undesirability of the "eradication of death", he reveals one important cultural commitment and script being disrupted by the immortalist quest: the "death acceptance" position developed over the past 60 years of attention and activism in a variety of death-related arenas – end-of-life care, patient choice, death with dignity, right-to-die, hospice care and compassionate dying. Those arguments and discourses, often developed in response to the perceived ill effects of medical technology, have now slipped into arguments and positions against the elimination of death as such, and consequently against Immortalism, tied as it is to a techno-scientific project[101].

My goal is not to justify cryonics or immortalism as such; nor is to attack their critics. The point I am building towards is that the transformation of the "good death" to "death is good" was a historical process that reveals something important about the struggle over valuations of life and death in a modern secular setting.

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[101] Even before the rise of fears and hopes associated with biotech, the early death denial and death acceptance publications and researchers charged cryonics with the self-destructive crime of 'denial'. Elizabeth Kubler-Ross' 1969 book, *On Death and Dying*, which was the founding block of the death acceptance movement in the US, directly references cryonics as something "very horrible and incredible" which "shows the fantastic degrees of denial" and raises the threat that "society has become so petrified that it has to destroy itself." (1969/2003: 30) This line is taken up consistently in most books about death or immortality, even when the topic does not expressly deal with technology itself. Finally, in John Hick's comprehensive study of the afterlife, *Death and Eternal Life* (1994: 87), we read: "But of course the most extreme refusal, within our contemporary culture, to accept the fact of death occurs in the development of the new technology of cryonics."

The Good Death Ideology

Callahan's declaration that "we", whoever that is, must *persuade* clinicians to work towards a good death rather than waste efforts to save lives at the end of life is an instance of a wider phenomenon: the transformation of the *concept* of a good death into the *ideology* of a good death. In this section I will outline the reach and extent of the good death ideology, before examining how the ideology operates in context.

"Good death" is a concept; under the concept there usually comes a list of items, which includes attitudes, procedures, preferences and more concepts. Over the past few decades, a consensus has developed in the West, especially in Anglophone countries, over the "good death" model, though it has also received some criticism. As Bethne Hart and collaborators write (Hart et al.1998), "the good death concept now holds a diversity of definitions and meanings that unify around the ideal of dying with dignity, peacefulness, preparedness, awareness, adjustment and acceptance." In general (Smith 2000, Clark 2002, Emanuel 1998), a good death is considered to be a death that is: free of pain; in which death is acknowledged and accepted openly with a free flow of information between doctors, patients and relatives; where the choice of patients and relatives over procedures are respected; where patients and relatives are given the time and environment to achieve peace and closure; and where dignity and privacy of patients and relatives is respected. In a survey of terminally ill US veterans, relatives and care providers regarding their preferences for end of life care and ideas about the constitution of a good death, Karen Steinhauser et al (2000) rank the following attributes as the most important across all three groups:

Freedom from pain

Peace with God

Presence of family

Mentally aware

Treatment choices followed

Finances in order

Feel life was meaningful

Resolve conflicts

Eventhough the good death movement started out as an outside challenge to bureaucratic administration, impersonal technological practices and medical authority at the end of life, its practices and discourses have spread wide and influenced a range of contexts and discourses, including ethical and political debates surrounding euthanasia, physician-assisted suicide, right to die, DNR and Advance Care directives. "The good death" ideal has by now been incorporated into most hospital units, and the field of palliative care – a term coined in 1974 – is entirely based on its principles (Timmermans 1996; McNamara et al 1994). Hospice care has grown considerably and continues to grow. According to the National Hospice and Palliative Care Organization, there are 4,700 hospice providers serving 1.4 million people with "a life-limiting illness" – up from only 450,000 in 1997 (Emanuel 1998). In 2008, 38.8% of all deaths in the US took place under hospice care, an increase of about 3% over the previous year[102]. Funerary associations have also assumed the discourse, criticizing bureaucratic and impersonal

[102] National Hospice and Palliative Care Organization. 2008. "NHPCO Reports Growth in Number of Hospice Patients Served, 1.4 Million, with a Wider Range of Illnesses Seen by Providers". Press Release, Nov 10, 2008.

ceremonies, and advocating a meaningful and life-enhancing process (Smith 2000). Nursing schools, end of life care training, mortuary schools and the funeral industry all teach death acceptance, good death and, more specifically, Kubler Ross' stage theory of death acceptance as a crucial component of the field, included in teaching text books (Germain 1980; Canine 1996)[103]. Extensive public education efforts on the topic have ensured that the ideas receive wide distribution (Steinhauser et al. 2000) and the WHO has included the principles of palliative care in its policies (Rousseau 1995).

In its policy statement on End-of-Life Care, the American Medical Association allows for a palliative approach that, when treatment is judged to be futile, obligates physicians to "shift the intent of care towards comfort and closure"[104]. How exactly the AMA defines 'closure' is not clear. Kellehear (1990) even contends that the use of the concept has been taken over by and is serving the interests of social institutions including medicine, law and the funeral industry. On the other side, hospice care itself has become more institutionalized, often coming into tension with the original ideals of creating a friendly environment for a good death (Hart et al. 1998; Russ 2005).

The ideal of a good death has recently been criticized on a number of grounds. The admitted vagueness of the attributes and conditions, such as those listed above, for practical guidance in a clinical setting has been a key criticism - though ironically it has led to a more bureaucratic breakdown of elements and rules that would help produce a good death through

[103] Aside from the hospice workers I spoke to, all funeral directors and workers were not only familiar with the ideas of death acceptance, but had studied them and, regardless of their religious beliefs, were advocating their validity and importance.

[104] http://www.ama-assn.org/ama/pub/physician-resources/medical-ethics/about-ethics-group/ethics-resource-center/end-of-life-care/ama-policy-end-of-life-care.shtml (last accessed Nov 20, 2009) Also see Smith (2000) for the position of the British Medical Journal, which calls the good death an "important aim for health services and for us all."

'frameworks' and 'systematic mechanisms' (eg Emanuel 1998). Yet, aside from a general agreement that freedom from pain is desirable and can be concretely achieved by administering medication, the rest of the attributes and recommendations continue to suffer from context-dependence, great variability in interpretation, and conflict.

As has been documented extensively in research[105], "achieving a peaceful death", to use words from Callahan's recommendation, is a complicated matter in situ, often involving a range of actors and authorities with different positions and values, from relatives who disagree to nurses, doctors and hospital administrators, sometimes even moving into courts and the media, as was the case with Terry Schiavo[106]. The decision to stop medications or cease potentially life-prolonging efforts is, as Sharon Kaufman's ethnography of PVS patients shows, filled with doubt and fear of terminating a life, full of what she calls a "phenomenological anguish" that cannot be captured by "the popular discourse about 'death with dignity'" (Kaufman 2000). Aside from the practical problems, there is the documented fact that people in different contexts bring different values and social positions to bear on their experiences and interpretations of the practices of good death, sometimes even in conflictual terms. Susan Long's (2004) ethnography shows that Japanese patients often prefer a "closed" system, in which they are not informed of the diagnosis; the hospice model is seen as being too "Christian" and the elements of a good death are viewed as part of an American ethos with an overly psychological and individualistic focus, rather than being part of an Asian or Japanese mode of bioethics. Similarly, Korean American patients in American hospitals often reject the demands of autonomy, and put aside their own choices in

[105] Problems with achieving a good death in practice include disagreements among clinicians (Anspach 1993) due in part to diagnostic and prognostic uncertainty and ambivalence (Christakis 1999), confusion in patients regarding options, diagnoses and even their own desires, disagreements amongst relatives (Seymour 2001), staff shortages and lack of resources (Zussman 1992).

[106] For further discussion see Mayo Clinic Proceedings 2005, Vol 80, No 11.

favor of decisions made by relatives or experts (Gelya et al 1998). Minority groups, especially African Americans, are less likely to use hospice and express greater preference for life-sustaining measures (Steinhauser et al 2000). Seale (2000) documents other cross cultural examples of variability in the response to the hospice model and interpretation of what constitutes a good death. The notion of personal choice at the end of life is also complicated by structural constraints, such that options are further limited by the influence and policies of insurance companies and health maintenance organizations (Long 2004). Gender and race are significant factors in the delivery of end of life care as is age. The older a patient the less likely he or she will receive high intensity care. Lower intensity care is correlated with age, in so far as spending on EOL is lowered as age increases, with twice as much spent on 65-74 year olds compared to those 85 and older (Shugarman et al 2009).

Yet, patients who do not conform to the principles and ideals of a "good death", are either said to be angry and in denial, "bad patients" or deviants (Germain 1980; also Kellehear 1984). Choice is idealized but choosing certain kinds of death – suicide, for eg. - is frowned upon; hope and meaning are appropriated and monopolized, such that only a certain form of dying – without technology, full of choices – can present hope and bestow meaning. Timmermans (2005) further argues that the focus on the negative aspects of hi-tech dying has obscured the fact that advanced medical care also provides hope and solace. Despite its discourse of *individual* choice, the ideal of a good death has created new *social* norms and pressures, and has become a different mode of managing and shaping the process, and with it the patient and the relatives, organized under the categories of choice and autonomy, and experiences of painlessness and meaningfulness. Some studies and textbooks even delineate the "duties of the dying" (Canine 1996: 49-50), which sometimes are euphemized as "adaptive tasks"; these include imperatives such as "the patient

must adapt to the loss both of loved ones and of the self… The patient must plan for the future while anticipating the loss of various forms of sensory, motor and cognitive abilities… The patient should continue to plan for and enjoy life as long as possible [eg. take a vacation, visit friends]. At the same time, the patient should make arrangements for a time when she will no longer be capable of carrying out her plans." Through such imperatives, the good death has become a "cultural script" (Long 2004, Hart et al. 1998, Timmermans 2005), a set of attitudes, rules and tasks prescribed as a "must" to all involved, the doctors, the administrators, the relatives, the funeral directors and ultimately the dying him or herself. Thus actors involved in the dying process are socialized into "an ideology that constructs a socially approved form of dying and death with powerfully prescribed and normalized behaviours and choices" (Hart et al. 1998). This assemblage of norms, rules, expectations and concepts is what I call the "good death regime".

What in effect has happened is that 50 years of death acceptance theory and practice have made the good death the prevailing cultural script through which we are asked to release ourselves into our ends. The good death is the dominant life-death regime in the US today. The response against what was represented as a death-denying culture has produced a circular cultural discourse in which "death acceptance" itself is what makes death acceptable and peaceful. But, as Marcuse asked some time before the good death movement took off, is the acceptance of death also not its repression? (Marcuse 1959: 73)

The Great Reversal

The idea of a good death is based primarily on three propositions, an ontological, a historical, and an existential one. The ontological proposition claims that death must be accepted

because death just is. Writing before good death, peaceful death and death with dignity became parts of quotidian vocabulary, Herbert Marcuse observed that we were living with an ideology that posited "death not only as the biological limit of organic life, as the scientific-technical limit of knowledge, but also as a metaphysical limit." Therefore, any attempt to beat it would have to be considered by definition futile. Obviously, if there is a metaphysical limit, "To struggle, to protest against the metaphysical limit of human existence is not only foolish, it is essentially impossible" (Marcuse 1959: 73). Yet, Marcuse argued, this is an "ontological inversion", substituting a metaphysical limit for a biological one. He called this an ideology that manifests itself in the tendency "to accept death not only as fact but as necessity, and as necessity which is to be conquered not by dissolving but by accepting it…" The idea of the good death is based largely on the notion of death as ontological necessity, rather than a biological fact.

The second, historical proposition on which the idea of a good death rests, holds that in modern society, science and technology have prevented us from acknowledging and accepting death. This is the modern social disease of death denial, the cure for which is to return to death acceptance. Yet, originally the concept of death denial was in fact applied by social scientists in the late 19th and early 20th centuries to "savages", the "primitive" and "religious" societies. It was not called "denial" for two reasons. First, the concept of psychological denial had not yet been properly developed and the term not popularized; second, because the view was not about a psychological denial per se but rather about irrationality or cognitive error, usually foisted upon people through religion, and social immaturity, where the individual had not yet properly emerged and therefore was not prepared to meet or cognize his or her own finitude adequately.

The first sort of argument – irrationality – was launched from a naturalist or materialist standpoint. There is no god, there is no afterlife, therefore beliefs in god or the afterlife must be

explained by other means. As we saw, for Frazer as with Tylor, the origin of afterlife beliefs or beliefs in spirit and soul came about as a result of mistaking visions or dreams for reality. Frazer (1911), for example, wrote that the primitive thought of his dreams, "which are strictly a part of his inner life", as having external reality, because "in his ignorance he commonly fails to discriminate them from what we popularly call waking realities". Tylor's famous account of animism in *Primitive Culture* (1958) takes the same tack, arguing that the immaterial soul was created in the imagination of savage societies as a way to account on the one hand for dreams and on the other for death, both of which, according to Tylor, seemed to pose a question about the self-contained materiality of the body: how does somebody else appear in my dreams without their body? How does someone who was talking and acting suddenly cease to do those things?

Later, Malinowski (1954) wrote about the extreme and immature fear that Trobrianders had in relation to death; they resorted to magic and ritual in order to allay that fear. Others such as Levy-Bruhl, Helmut Plessner (1983), and John Hick (1994) have insisted that savages and primitives could not conceive of death properly, and therefore had a childish relationship to it, thinking of it in terms of magical actions or without a clear sense of individuation from which the finality of individual death would logically flow.

As Johannes Fabian has pointed out, "usually without critical examination, these 'primitive' reactions to death are placed in the domain of religion (which in turn is taken to constitute a self-contained aspect of human activity) and this makes it possible to replace the general evolutionist perspective with a view of 'secularization', religious devolution, as an intrinsic component of modernity…" (Fabian 1973: 52) In this scenario, the proper mature, rational reaction (see, for example, Leuba's above-mentioned study on immortality (1916)) to death was in fact held to be the modern, Western reaction, which at the time was thought to

consist in the ability to face up to the reality and finality of death as a material event without recourse to magical thinking.

At some point the argument was turned around and pointed at the modern West itself. It was suddenly the modern West that was immature and death denying, victim of the illusions of its own scientism and optimism that were hiding the finality of death. This switch-over took place in a two decade period between the 1950s and 1970s, when a number of writers popularized the death denial theory. Calling it the pornography of death in 1955, Gorer (reprinted in Gorer 1965) was amongst the first to contend that death in the West had become shameful and even sinful, something to be kept out of sight, the way sexuality is kept out of sight. "In the presence of death," echoed the psychologist Herman Feifel in 1959, "Western culture, by and large, has tended to run, hide and seek refuge in group norms and actuarial statistics" (Feifel 1959: xii). Becker's influential book, *The Denial of Death* (Becker 1973) even credited "death denial" with generating all of human culture. But it was the West that had suddenly become the embodiment of denial. American culture in particular, even more than other modern technological societies, was and is held out to be a culture of *death denial*, in which the reality of death is systematically pushed out of sight in order to get on with life, work and the pursuit of happiness. Aries (1975: 94), the eminent historian of death attitudes, places the effacement of death, its "shame", squarely in the history of America: the idea that one must avoid, for the sake of society and the continuance of a happy life, the ugliness of death and misery of dying. Because of the obligation to happiness, "the moral duty", sorrow and sadness are "sins against happiness". Therefore, death has been branded with an interdiction: do not show your sorrow, your emotions. The foundational studies of Glaser and Strauss (1965) and Sudnow (1967)

seemed to confirm all this, revealing hospital settings in which the prognosis of death was kept hidden from patients and families.

The solution had to be to drag death out into public view and accept its reality. Only then, it was suggested, could we have an individual good death - as well as a shot at world peace! The idea was circulated in the 1950s in academic settings and symposia, and reached its critical momentum in the late 1960s and early 1970s. Organized efforts produced curricula that sensitized people to the inevitability and naturalness of dying (Kaufman 2005:27). The various "modern death movements" developed strong social influence along with a set of concepts and practices that entered the world of popular media as well as the courts of law to slowly form their ow life-death regime.

On the one hand, these were clear and self-declared reactions to the new realities of institutionalized dying, a reaction to new "death ways" (Metcalf and Huntington 1991) wherein a majority of Americans were dying in hospital wards, under the gaze of doctors and care of machines rather than relatives. On the other, I argue, they emerged after and with direct reference to a wider context, that of the devastations wrought by the Second World War, with its holocausts and nuclear annihilation of Japanese cities and existential dilemmas about the very point of life and the difficulties of conducting a moral one. Tracing some of this history will help us understand the contours and conditions of the ideology of the good death as it linked meaning and death – that is, as it emerged with the third, existential proposition on which the good death rests: death gives meaning to life.

Futurelessness and the Origins of the Good Death

The field of psychology, which has dominated American studies on death and dying and

has directly influenced practices and norms in American life-death regimes, turned its attention to death in the 1950s. Before then, works on death were few and mostly speculative (Kastenbaum and Costa 1977). Some have attributed this shift to the "disasters of war and a need to reconsider basic human values" (Kastenbaum and Costa 1977:227, also Lifton 1975). Compounding the general "disasters of war", was the threat of nuclear annihilation, of "total death". In fact, these influences are quite apparent in the personal histories of the key figures in the psychology of death as well as in the development of their writings.

Probably the most significant line in this history must be traced back to Herman Feifel, often considered the father of the modern death movement. Son of devout and observant Jewish parents, Feifel enlisted as an aviation psychologist in the Army Air Corps in 1942. In the last two years of the War, he was transferred to the island of Tinian, from which the main bombing campaigns against Japan were being staged. He worked with flying crews suffering through stress and fatigue from the intensity of the Iwo Jima and Okinawa campaigns. Both of the B-29 bomber planes that dropped atomic charges over Hiroshima and Nagasaki flew out of Tinian. Feifel posed for a photograph next to the Enola Gay two days after it released its load over Hiroshima (Ansell 1997). By his own admission, his experience in Tinian and the epochal shift brought about by nuclear bombs and their ability for mass destruction, played a large part in his desire to delve into the meaning of death.

Feifel received his PhD from Columbia in 1948 and worked with veterans as well as terminally ill patients, continuing to ponder the relationship between life, death and purpose. He believed that psychology was too focused on analysis and definitions rather than on "pupose, anxiety, conditions of well-being and redemption". He wanted to aim for "a psychology committed to purposive and striving man…" (quoted in Ansell 1997: xxiv) and death seemed to

focus these questions for him. He organized the "first scientific symposium" on "Death and Behavior", held at the 1956 annual meeting of the American Psychological Association, after which he put together an influential collection of writings entitled *The Meaning of Death*, with essays from a wide range of sources including essays by Jung and Tillich, alongside new clinical and experimental studies. Published in 1959 by Mc-Graw Hill, the book attracted national attention and was reviewed in mainstream magazines such as *Time*. For the next forty years, Feifel wrote tirelessly and educated a generation of psychologists and social workers in death attitudes. He developed some of the early methodology in the field and devised the first instruments for measuring death attitudes and anxieties.

Although the arsenal of terminology and concepts developed since then were lacking at the time, *The Meaning of Death* succinctly lays out the basic ideas that have formed the backbone of the good death ideologies and movements. At the conclusion of his introductory essay, after reviewing the diverse contributions, Feifel presents three dominant and wide-ranging "leitmotivs" instead of concluding points.

"1. Denial and avoidance of death characterize much of the American outlook. Life is not comprehended truly or lived fully unless the idea of death is grappled with honestly. This has implications not only for the individual but for society as well.
2. It is conceivable that our science-conscious culture, which tends to measure all experience within the bounds of space and time, does not furnish us with all the necessary parameters for investigating and understanding death…" (Feifel 1959 : xv)

There is little in the essays themselves that would warrant these leitmotivs cum

conclusions. These conclusions, in other words, are starting assumptions. For example, in the second paragraph of his introduction, Feifel has already stated his conclusion as a hunch: "When we stop to consider the matter, the notion of the uniqueness and individuality of each one of us gathers full meaning only in realizing that we are finite." In the following paragraph, he states the contents of the second leitmotif-cum-conclusion as one already foregone: "The individual face of death has become blurred by embarrassed incuriosity and institutionalization… Concern about death has been relegated to the tabooed territory heretofore occupied by diseases…" Nevertheless, these starting assumptions set the agenda for research in the next few decades – the harmful relationship between science and death, and the imperative of looking death straight in the face in order to make both death and life meaningful again.

On the side of practice, we must look at the Swiss-born psychologist Elisabeth Kubler-Ross, whose 1969 book *On Death and Dying* (1969/2003) marks a watershed for death awareness and death acceptance movements. The origins go farther back to England with Cecily Saunders' tireless work in the 1960s, and the founding of the hospice movement as a way of providing the dying a more humane way to expire than in an impersonal and unfamiliar hospital ward; or they could be traced even farther back to religiously based hospice-type homes around the world before that (Rousseau 1995). But although the hospice movement in the United States was certainly influenced by Saunders' early success, by far the most influential work was Kubler-Ross', which directly led to the development of the first American hospice in New Haven, Conn., in 1974 (Rousseau 1995). Kubler-Ross' model of the stages of death has become the dominant one in American end of life care, be it in hospice or hospital wards; the ideas of the stages of death and mourning, along with the discourse of closure have made their way deep into popular culture and language; and her book is widely available in the self-improvement section

of most major bookstores.

It is fascinating that almost the entire first chapter is devoted to a particular form of technological death, to weapons of mass destruction that wrought devastation on whole cities and entire populations – to a threat against the whole species. "Now the soldier as well as the civilian has to anticipate weapons of mass destruction which offer no one a reasonable chance, often not even an awareness of their approach. Destruction can strike out of the blue skies and destroy thousands like the bomb at Hiroshima; it may come in the form of gases or other means of chemical warfare – invisible, crippling, killing… This is how science and technology have contributed to an ever increasing fear of destruction and therefore fear of death" (26). The response, she observed, has been an entrenched and extreme denial, in which people want to conquer death by driving fast on hiways, say, or gather into street gangs, or even nations that "use their group identity to express their fear of being destroyed by attacking and destroying others." So she then asked, "Is war perhaps nothing else but a need to face death, to conquer and master it, to come out of it alive – a peculiar form of denial of our own mortality?" (27)

So both Kubler-Ross and Feifel refer their quest to a general condition of fear and meaninglessness in the post-war period. They contextualise their own work within the frame of a new global and existential era of modern warfare and destruction, an era Gill Elliot (1972) characterized as "total death". Total death refers not simply to the scale – the possibility of annihilating whole cities, even species, and now of course the entire globe – but to the changes in consciousness and the structures of knowledge that come with it (Elliot 1972: 131). Clearly, as Elliot argued, visions of apocalypse and doomsday and judgment day were not new; what was new was their literalisation (itself also symptomatic of a modernity which transformed many of the previously "religious" concepts first into "metaphor" then into a "literal" or "natural" event).

Total death, according to Eliot, became "the central moral as well as material fact" of the 20th century.

In his studies of the American Federal Civil Defense Administration (FCDA) during the Cold War, Joseph Masco (2008) has argued that "a new kind of social contract was formed in the first decade of the nuclear age in the United States, one based not on the protection and improvement of everyday life but, rather, on the national contemplation of ruins." Contemplating the ruins was used as a deliberate nation-building technique, forming the citizenry through fear and discipline and a focus on an external threat. The propagandistic proliferation of nuclear imagery through the media[107], the wide-spread and ritualized preparation schemes carried out nationally in institutions and communities[108], and the militarization of everyday life were combined in a program of "productive fear". Clearly, the FCDA had some very deliberate objectives - testing and preparing equipment along with citizens – we can only speculate on the actual effects on the national culture when 100 million Americans tuned in to watch the simulated atomic destruction of a typical suburban community, a destruction narrated by the voice of Joan Collins.

That the proliferating images of a nuclear end and an awareness of "total death" may have produced moral and existential quagmires, and a sense of despair over survival, as part of the experience of the age is evidenced by the new rise of apocalyptic movements and beliefs, and

[107] In the 1950s, "the Federal Civil Defense Agency (FCDA) saturated newspapers and magazines with nuclear war planning advertisements and could claim that its radio broadcasts reached an estimated audience of 175 million Americans per year. As the campaign evolved, the FCDA turned increasingly to film, creating a library of short subjects on nuclear destruction and civil defense that was shown
across the country in schools, churches, community halls, and movie theaters." (Masco 2008: 367)

[108] "From 1953 to 1961, the yearly centerpiece of the civil defense program was a simulated nuclear attack on the United States directed by federal authorities. On May 5, 1955, 100 million Americans watched live on television a "typical" suburban community blown to bits by an atomic bomb (see FCDA 1955 and1956)." (Masco 2008: 370-372)

both a secular and religious concern over the end-times. In his psychological studies of the 1950s and 60s, Robert Lifton, a Feifel follower, identified a "radical sense of futurelessness" and overwhelming "doubts about the enduring nature of anything" (Lifton 1987: 142-144; also Strozier 1994, Wojcik 1997). Additionally, we should recall the kind of moral morass that engaged thinkers like Adorno and Arendt as well as existentialist philosophers who were trying with difficulty to imagine what kind of life would be worth the living in the light of the horrors they had witnessed, an impasse that had been prefigured in Nietzsche's heroic counter-sigh in *Twilight of the Idols*, asking us to "die proudly when it is no longer possible to live proudly".

What is certain is that the two progenitors of the modern death movement were thinking in this vein. Yet, from that wide political context they narrowed their solutions down to problems of individual psychology, suggesting that good dying would help the problems of living. To quote Kubler Ross (2003:27): "if all of us would make an all-out effort to contemplate our own death, and to help others familiarize themselves with these thoughts, perhaps there could be less destructiveness around us." Indeed, we could even attain a Kantian state of perpetual peace: "we may achieve peace – our own inner peace as well as peace between nations – by facing and accepting the reality of death" (31). So Kubler-Ross starts by laying out a scenario of devastation, where total annihilation is constantly present, but ends up by claiming that the main problem is that we are not facing individual death properly!

It is no accident, either, that the title of Feifel's book *The Meaning of Death* underscores the obverse of what it spells out – *The Meaning of Life*. Like Kubler Ross, the goal for Feifel was precisely the establishment of a relationship between the two, death and life, but flowing from the former to the latter, from death to life. After all, one could conceivably develop a program that would go the other way, attempting to form "a good life", a fulfilling life that would in turn

make death in some way satisfying enough. But to turn the good life from a personal into a *general*, that is a social, condition, is a political proposition, not a psychological one – a proposition which, after the promises of the enlightenment, seemed to have reached, by the time Feifel and Kubler Ross were writing, that is in the aftermath of nuclear bombs and gas chambers and gulags, its point of exhaustion. The good death movement was born at a time when the future turned from being a promise to being primarily a threat, turning the enlightenment possibility of building a good life through politics, to an inescapable battle with annihilation. The good death perhaps was pointing to the limits of the good life.

The early studies unquestioningly assumed that the sense of meaninglessness, deemed central to the experience of mechanized dying, was caused by the context of technological hospital death, in which death is impersonal and constantly forestalled by medical and technological means. In the social sciences, two comprehensive sociological studies in the US of death and dying in modern hospital settings helped lay the foundation for the literature on the good death. Glaser & Strauss (1965) studied "awareness contexts", meaning the ways in which an "awareness of death" as a diagnosis or prognosis is made available to or hidden from dying patients by hospital workers and physicians. They introduce the concept of an "appropriate" or "good death", meaning an open awareness context in which all involved are informed of the prognosis and the diagnosis, and therefore are given the time to negotiate and manage critical events in the process, participate in certain decisions, and have time for quality interactions at the end of life. Two years later, Sudnow's *Passing On: The Social Organisation of Dying* (1967) examined hospital dying in terms of "death work", that is, the routinization, bureaucratization and instrumental calculations that managed the dying process. The organizational imperatives of hospital work and the medical authority and expertise of the staff over-rode the "autonomy

interests" of dying patients. Consequently, patients were said to experience meaninglessness, powerlessness and loss of control. It was never considered that the sense of meaninglessness may have been related to a more general condition of modern living and dying, of a struggle over Total Death, over existential meaninglessness and/or over an anxiety about a secular final death with nothing, absolutely nothing, to follow.

Again Kubler-Ross' trajectory is helpful here. Her entire project started out because in 1965 some theology students in a seminar were given the task of writing about the "crisis of life" (2003:35). They identified death as the main crisis of life and came to Kubler-Ross for assistance. That was the germ of her research project, the crisis of life taking her for the first time into the wards of the dying.

Kubler-Ross' book presented a study of terminally ill patients in which she famously documented five stages in the dying process, starting with "denial" and, if all goes well, ending in "acceptance" after a cathartic period of "anger". The concept of death denial, however, was only anecdotally documented. Even later psychology neglected to document by direct research the contention that adults hold essentially a

denying orientation. As Kastenbaum has written, "observers have instead supported this conclusion by references to treatment of death by the media, anecdotal reports, and behavior noted in special situations" (Kastenbaum 1977: 233). Nevertheless, Kubler-Ross deemed her stages to be the appropriate and necessary steps to the making of a good death, registering some very specific recommendations for patient helpers – from "We may let him know that it is all right to say nothing…" to "A visit in the evening may lend itself best to such an encounter…" The process is a classic stage model, where the final, desirable goal, "acceptance", is the opposite of the first state, "denial". Acceptance is not a "happy stage". It is simply the thought

that the time is finally here and one can yield to it peacefully: “an existence without fear and despair” (2003:130). So “acceptance” seems like a natural recommendation, a good state to work towards. Yet, this is not so unproblematic as it might seem at first, especially if it generates recommendations for people who are helping dying patients. Demonstrations of anger are labeled as “psychotic episodes” which exemplify and deepen “denial”. Denial, in turn, is something that must slowly be eliminated by professionals who are sensitized to the idea of “death acceptance”, peaceful death, etc. Kubler-Ross recognizes the dangers of her prescriptive assertions when she makes a fragile distinction between acceptance and “giving up too early” (125), without providing any clinical or analytical indices to clarify each, and later draws a very shaky line between hope that is good and necessary, and excessive hope that is deluding (148-150). Is “giving up” a matter of timing (too early or at just the right time)? When a patient helper is working a patient towards acceptance, are they not working them towards “giving up”? Are they not influencing their “autonomy”? How much choice do we have about acceptance? What convinces us to accept the normative judgment that “acceptance” of death is more appropriate than “anger” towards it? Her speculative final argument is that peacefulness closes the circle of life, because it returns one to the calm passivity that is the condition of infancy (130). And yet there are also those who enter the world kicking and screaming.

The ideal acceptance in Kubler-Ross’ view comes from “the older patient who feels at the end of his life, who has worked and suffered, raised his children and completed his tasks. He will have found meaning in his life and has a sense of contentment when he looks back at his years of work.” Of course, this older patient is an ideal-type, one whose type is older than Kubler-Ross’ assumed ideal. For example, a decade earlier, in an essay chosen by Feifel for his collection, Kaufmann also contends that only an individual who has made something of his life can meet

death without anxiety.

But how, one wonders, is someone who has not completed his tasks and does not feel a sense of contentment when he looks back at his years of work, going to be made to feel complete and content? Bringing patients to this kind of acceptance is a "monumental task," writes Kubler-Ross, an achievement through which many patients will need assistance from relatives and professionals (130). A task because aside from that ideal-type, most regular flesh and bones people will need assistance in order to work backwards to reconstruct a meaningful life out of what was just a sort of living followed by a meaningless death. So the monumental task of providing a good death is in fact to reverse the directionality of life and death, to make a good death flow back and fill up a banal life, rather than have a good life fill up the emptiness of death.

This founding reversal is the watermark in what some have come to call the "good death ideology" today. Take for example the list, cited above, compiled by Steinheiser's study of the attributes that are considered to make up a good death.

Freedom from pain

Peace with God

Presence of family

Mentally aware

Treatment choices followed

Finances in order

Feel life was meaningful

Resolve conflicts

Aside from the first one, is this list not item by item the exact opposite of what modern life is like for a majority of people: the struggle over belief, the dispersion of the family, increasing prevalence of psychological or mental illnesses, out of control finances and economic situations, the nagging sense of inadequacy, that life is meaningless and full of unresolved conflicts? At least one aspect of the anguish of dying for many, as for Tolstoy's Ivan Illich, must be to look back and see an incomplete life, a string of conflicts, alienated relatives, unfinished tasks, messed up finances, and petty achievements. And all of this without the extensions afforded by an afterlife where things could or would finally work out.

The focus on the individual and his or her strivings and failures obscures the limitations imposed by social structure on ability and choice. So the concentration of choice at the end of life suddenly becomes an act of redemption, against the social limitations of the past, as well as the secular sense of the purposelessness of life itself. Kubler-Ross admits as much: "… fewer people really believe in life after death, in itself perhaps a denial of our mortality. Well, if we cannot anticipate life after death, then we have to consider death…"At the very moment when all that is ahead is inevitability, when choice has become so limited as to be virtually irrelevant, "choice" is elevated to the paramount value. At the most undignified period of constraint, *dis*-ease and dissolution, "dignity" is turned into the main objective. At the moment when life is coming to its end, it is suddenly rendered meaningful by a peaceful death. Just when life is emptying out of any discernible quality, we want to assess and provide better "Quality of Life". The good death position requires the acceptance of death as the final chapter of life, and closure is prescribed for both the peace of the dying and the bereaved without addressing the possibility of a wider chronic sense of futurelessness. The good death regime insists on closure for a life

that, shut closed by secular finitude and the existential threats of total death, has been left open to incompletion and failure as *a life*. A good death is invoked as a way of suddenly producing a good life, as though a good life *lived* were somehow being seen as an impossible task, leaving us with a series of oxymoronic expectations and positions, of which the following statement, taken from a medical journal no less, is exquisitely paradigmatic: "A good funeral is a life-enhancing experience" (Smith 2000).

The Nothingness After and the Lost Object of Life and Death

Aries' studies of death attitudes in Christian Europe shows how struggles over life and death were negotiated via the afterlife. The scene of the deathbed, for example, which gained in importance through the middle ages in medieval Europe, was a trial between the good and evil sides of each person, as contained in his book of life all of which is held up for him to behold at death. The attitude at the moment of death determined his fate: despair over his sins and repentance; vainglory over his goodness; or passionate attachment to this world of things and persons. The time of death and the comportment of the dying at death bestowed their past with religious attributes and recast their life (Aries 1975:39-41) .

In some ways, Aries' account of the struggle with life's meaning at the time of death echoes the discussions around the contemporary notion of the good death. Yet the differences are crucial. I'm not about to suggest that within Christianity there was no concept of a good or meaningful death, and that the attidues towards death did not recast a lived life in some special way. Clearly, the rewards of heaven, its spiritual status and material comforts, were seen as an improvement on anything earthly. A virtuous life would see its rewards in the afterlife, and therefore death was potentially a gateway to a higher existence. But we must be attentive to how

different categories and concepts present different experiences and dilemmas. If the deathbed was an occasion to reflect back on life, this was done through very different categories and elicited different reactions and experiences: sin in life, the journey of the soul, the judgment, the sense of fate and guilt in religious terms. And in turn they enabled a different set of interventions that are not available in a disenchanted, secular frame, without an afterlife or a metaphysical dome.

Once the afterlife is eliminated or at least discredited, the terms of any negotiation at the point of death, or even throughout life, change radically. Tony Walter, for example, has written that "the very concept of 'bereavement' is a secular one" (Walter 1997:181), by which he means "the idea that the real problem after death is the grief of survivors, rather than the journey of the soul of the departed, is a secular idea…" In other words, categories and judgments once used to channel, manage and understand death, are no longer useful in the same way. If in secular death only the experience of the survivors appears as significant, it is because for the dying there is nothing ahead.

The experience of a "fear of death" due to judgments about sin or virtue are very different from the experience of a fear of nothingness. This is a modern experience for which new terms were invented by Schopenhauer and Kierkegaard: dread and anxiety. In *The Concept of Dread*, Kierkegaard defines dread as the anxiety over nothingness: "That that which is threatening is *nowhere*", he writes; it is the anxiety that comes about when "the 'it is nothing and nowhere' stands revealed" (Kierkegaard 1957: 186). It becomes clear in modern thinkers like Sartre and Heidegger that the struggle with death is really a struggle with emptiness, nothingness. By mid-century, the theologian Paul Tillich could write about the ways in which anxiety about emptiness and meaninglessness of life supplanted the older anxieties channeled via religion about fate, guilt

and condemnation (Tillich 1952/2000). As I argued previously, life turned into a task or a project when it became a closed and self-contained process, and instead of damnation or salvation, a person's life faced the possibility of success or failure. In the secular frame, attitudes and practices around death shifted towards memory, and the notion of survival after death or immortality was focused on "works", on a person's life project (Aries 1975, Walter 1997, Lifton 1975). Part of what marks the experience and discourse of secularism is this split – or conflict – between the value of life as such and the value of life as a personal project, the former being bare life, the little-valued life of any animal, the latter constituting a worthwhile, human life, the life of an intelligent, autonomous being who can plan ahead and work to achieve something.

With the latter also comes the prospect of failure and futility, the fear that all our little accomplishments will be pointless, as Weber said in his analysis of disenchantment; that we live and die *for* nothing. The modern "meaning of life" problem in the face of radical finitude raises, as Weber intimated, the question of purpose: what is it all *for*, this petty planning from day to day? The philosopher Thomas Nagel characterises my point in the following way: "The problem of the meaning of life is in fact a form of skepticism at the level of motivation" (Nagel 1986: 218). Are we, as Wordsworth wrote when his political ideals were dashed, just "unprofitably traveling towards the grave"? Note Wordsworth's deliberate use of the adverb – unprofitably – as a gloss on the secular assessment of the worth of a solitary, utilitarian life. What is the exchange here? What is it *for?* Nothing?

Of course, the breakdown of metaphysical views about morality and greater meaning, though significant in terms of experience, have not and probably will not lead society to a standstill of despair, to a final Oblomovesque lack of motivation on a social level. The philosopher Richard Rorty (1989) has drawn a parallel between the falling away of the afterlife

and the dissolution of metaphysical views, arguing that in the 18th and 19th centuries it was regularly suggested that the falling away of the afterlife and dissolution of belief in the soul would lead to a dissolution of social ties and moral behaviour; it was said that the hope of heaven was required for moral fiber. After all, how could an atheist swear to tell the truth? As it turns out, truth is told and social ties are strong or weak independent of belief in postmortem reward. In liberal societies, Rorty concluded, social hope is attached to ideas about a freer, less cruel, more leisured life. That life in general is not damaged by philosophical or scientific discoveries (Rorty 1989: 86) because liberal societies are not bound together by philosophical beliefs, but by common hopes and common vocabularies. Members need to be able tell each other convincing stories about "how things might get better". Yet, as Rorty himself argued, for the stories to be convincing, they must indicate something that can "compensate" for "present sacrifices" – implying of course that the present is always a kind of sacrifice, that the commitments of daily life today are not satisfying in themselves but are for something else. And that commitment must somehow be worth it, it must have an object, be *for* something else. "Liberal bourgeois institutions" take up the slack here, according to Rorty: freedom of press, the judiciary, elections, educational opportunity and social mobility provide the space for individuals to "create their private self-images" and work out "their private salvations".

This is similar to the claims of another liberal philosopher Ronald Dworkin. In *Life's Dominion*, his book about the laws of abortion and end-of-life decisions, Dworkin (1984) claimed that the rights of individuals to a critical interest in life are central to any conception of the values of life and death. Critical interest is about the cultivation of "a sense of self" to which a certain desire is crucial: "a desire to make a success of living, to make something valuable of their own lives" (1984:238).

Aside from the obvious structural obstacles to success, there is the problem of how to measure that success, by what criteria to assess what Rorty's "present sacrifices" amount to. In this, the autonomous modern sovereign individual has little choice but to fall back on him or herself. That poses two problems. As Schopenhauer anticipated, for the individual, desire may be endless, therefore satisfaction is practically impossible. As a result, "Life presents itself chiefly as a task" (2010:29). Whereas if life (or life's works) had any intrinsic value it would also be satisfying in itself. As it is, the self is its own ground of authority and authenticity. "Life is now a lonely pursuit," wrote Norbert Elias. "It is my self, I alone that lasts through life; it is only my self on which the sense of that life can be founded… Once life has been emancipated from all pre-arranged, inalienable responsibility [eg to tribe and nation], once this life is not 'for' anybody and anything in particular… everything will abruptly come to a stop the moment that only power behind life, the ego, my own self, ceases to be. Loneliness of life results in the loneliness of death" (Elias 1985/2001: 50). This radical perception and experience of finitude as a life always incomplete, subject to failure and without ultimate purpose indicates that what has been eliminated is the *object* of life and death – what we live and die *for*.

Rather than an unresolvable metaphysical abstraction, I am suggesting that the meaning of life problem can be cast in historical terms as the lost object of life and death, the inability to clearly determine or accept what it is good to live for and die for. The modern secular notion of a Good Death, with its rhetoric of meaning and hope, its attachment to death acceptance, is one response to a world in which a proper object of death cannot be posited. Through the reversal of the axis of life and death, death becomes both its own object and the object of life. Whether this is or is not a healthy position to take is not for me to determine. But I do want to extend my argument that while these kinds of dilemmas have been cast as existential, metaphysical or

psychological matters, they have important political and social dimensions. Earlier I showed that the history of the good death movement was linked to a period during which the limits of the good life as a political project were surfacing in stark, global terms, when the optimistic future of the enlightenment political project seemed to have transformed into a sense of "radical futurelessness" under the shadow of nuclear bombs and massive modern warfare.

It is important to note, in this context, that a good death is not and has not always been a peaceful death, the way the good death regime has normalized it. An honorable and meaningful death has often been tinged with violence; it is and has been considered good when it is heroic or sacrificial, in duel or in battle, for vengeance or martyrdom (see, for example, Roberts and Saniotis 2006). In such cases, death has an object – it is *for* something. For god, in a most general sense, or for the ancestors, or perhaps for the community, the nation, or even for honor itself, when honor's shape had clearer contours, or for a loved one. What was lost in the absurdity of modernity was the object of a good death – especially as viewed from the ruins of a post-war moral morass and the proliferation of the kinds of possible apocalypse, eg biological, environmental, asteroidal, etc.

In 1917, towards the end of years of protracted trench warfare in Europe and hundreds of thousands of deaths that were commonly thought of as senseless (Fussel 1977, Winter 1995), Sigmund Freud published one of his most mysterious and prescient essays, "Mourning and Melancholia" (Freud 1957/1989). He famously describes mourning as a sort of "work" which the mourners must get through in order to emerge in a functional state at the other end. The "work" he described as the task of mourning in order to get over the grief of losing a loved one and "set the ego free" – by reckoning with the pain, reorienting it towards a different object – could well have been the model for many later psychological works on grief and bereavement. In contrast to

the successful work of mourning, Freud presents melancholia. Melancholia, according to Freud, is a state of grief in which the griever has lost, or never had hold of, the object of grief. Because there is no object, no 'work' can be done towards resolving the relationship and thus melancholia is characterized by a semi-permanent state of mind, an anti-social demeanor, a sense that everyone and everything is "worthless". Freud reaches a point of contradiction here: he calls this heightened sense both a sort of pathology as well as a kind of wisdom. The melancholic is sick, yet has access to a certain kind of truth: he realizes his life is worthless because it has no object, it cannot be properly exchanged, there is nothing meaningful to give it up *for*. If melancholia is an object-less state of grief, then perhaps it is an apt description of the modern condition I have been describing: the inability to determine what it is good to die *for*. Whilst much recent biopolitical analysis of sovereignty has focused on the delineation of who is or is not worth killing, an equally important task for any state, any sovereign, is to reclaim, or reconstruct, an image of the melancholic's lost object: what it is good to die for.

Chapter 5
Biotechtopia:
From the Good Life to Life Is Good

Up to very recently, the various immortalist movements spoke of their goal specifically as defeating death. At that first meeting of the Immortality Institute described in the introduction, members were voting on the phrase that would best characterize their goals and the winning votes went to "conquer the blight of involuntary death". The phrase has served as the mission statement of the Immortality Institute. It used to be on the web page masthead, and it's in the first sentence of their first edited publication (2004). The term death still permeated the language of Immortalism in a way that it no longer does. Though the shift has earlier roots, in the past half decade immortalists have begun to think about and portray their endeavour principally in terms, not of preventing death, but of *saving lives*, explicitly calling their projects "life-saving techniques" or putting them on the same level as "critical care medicine". They write about cryonics, for example, as an intervention that places "critically ill patients … in a state of long-term care" (de Wolf 2007). They have contributed to the journal of *Critical Care Medicine*. One of the private research companies is called Critical Care Medicine. The *Methuselah Foundation* has added an on-line consulting site to give advice about a "wide range of illnesses and conditions that may negatively impact your lifespan or the life of a friend or family member" as well as a *New Organ Network* which helps secure organs for members who need them. The *SENS Foundation* once focused on anti-aging medicine is definitively in the business of "keeping people healthy" through *rejuvenation medicine*. Taking the lead of one of their primary theorists and activists, Aubrey de Grey, immortalists now frequently talk about their work in terms of the moral imperative, not of preventing death in the abstract, but of saving lives,

individually and collectively. The *Maximum Life Foundation*, a non-profit dedicated to reversing aging thrugh biotech and nanotech, tells us that "if we can speed up developing dramatic life extending technologies by just a few years, we could ultimately save more lives than were lost in every war since the beginning of time."

> Consider. The human death toll in the Year 2001 from all 227 nations on Earth was nearly 55 million people. 52 million of these were "natural" deaths and 37 million were directly related to aging.
>
> Consider. Natural death also destroys wealth on a grand scale, an average value of about $2 million dollars for each human life lost, or an economic loss of about $100 trillion dollars – every year. That's equal to the entire tangible wealth of the world.
>
> Consider. The world's greatest resource is the knowledge, skills and wisdom acquired by 2 billion older world citizens. We waste 100,000 of those resources every DAY due to unnecessary suffering and premature death from aging causes.

Every death, in this view, is a potentially preventable tragedy. Except we are not dedicating enough resources to preventing the tragedies, according to immortalists. Some moral attacks on Immortalism fault it for concentrating on the lives of the few, or dedicating resources to the wrong sorts of procedures when with less money lots more lives could be saved in other parts of the world. But equating life extension with critical care medicine changes the calculus

for immortalists. Ben Best, director of CI, defends cryonics on just these grounds: "You'll see a lot of that sentiment, of how socially irresponsible it is, with all these people in dire circumstance… And my response is, we might as well stop all medicine. There's no reason why we should be doing heart transplants or medical research either."

Immortalists have come to frame their engagement in life extension activities as a moral venture, an absolute and rational good. Thus, in conducting life extension research or contributing in one way or another to Immortalism, they are *doing good* works. On the website of the Cryonics Institute we read: "the cryonics thesis is not *just* that cryonics is possible. It *is* possible, but it is also *desirable.* Cryonics is a worthwhile and admirable endeavor. It's not only a smart thing to do -- it's a kind and *good* thing to do. Something in harmony with, and even dictated by, a responsible, moral, humane outlook on life."

If you can convince yourself and others that your project is saving lives – not just defeating death for a small subset of people – then you have tapped into the irreproachable ethos of life in American culture. There is no "nobler legacy", says the Maximum Life Foundation, than participating "in one of the most important and profitable ventures in history".

One might be tempted to argue that this is just a strategic way of turning an outcast, science-based project into a legitimate one by tying it to a morally crucial issue. One might be tempted to call it "spin". One might be right, but only to a certain extent. Whatever exaggeration, framing and spin there might be in the presentation of Immortalism to the outside world, the morality of life-saving has become a fundamental part of the internal practices and a sincere part of the vision of Immortalism. It is through this biomoral lens, for example, that they distinguish between the work of their own scientists and that of other scientists who also do research relevant to life extension but without taking on the moral vision. When I asked about the work of

an academic researcher working on cancer, one immortalist researcher who had once worked in conjunction with the SENS Foundation and was setting out to create his own lab, responded, "Well, I think he's doing it just because he's scientifically curious. He's not interested in saving lives." A story about Aubrey de Grey has it that at a fundraising dinner he argued his position by depriving a guest of food, thus bringing out the urgency of survival, of his moral stance towards life extension as a means of saving lives, in a literal way. The hungry guest wrote a check right away and was subsequently fed.

In an internal review and briefing after a cryonics case, one member asked the team "whether we had done everything we could to save the patient's life?" By that he was referring to keeping him alive here and now, "pre-mortem", rather than saving his life through suspension for the future. As with the EMS incident described in chapter two, the difference between the two kinds of life, the suspended and the actual, runs along a narrow seam and can produce conflicting or confusing events for cryonicists. The patient had developed an infection. He was unconscious and on life support, so the attending physician, along with the next of kin, decided to forego further treatment and only administer morphine according to palliative protocol – that is, to alleviate or diminish pain and suffering, in case the unconscious patient had any experience of pain and suffering. The question that arose for the cryonics team was: is it right to just remove medical treatment, in effect giving up on the patient, allowing him to die? The patient was pronounced dead less than a day after treatment was stopped and the patient removed from medical support. During the case review, the member pressing the point was clearly agitated and angry at the attending physician. He argued that although the team had no power of attorney or authority over the living body, they were in touch with the family and the physician, so they had the moral obligation to at least urge them to continue anti-biotic and other treatments, allowing

the patient to possibly recover. Other team members agreed with this in principle, but they also took the position that by interjecting themselves into the decision-making process prior to death, they would be exposing themselves to conflict, which might have endangered their post-mortem cryonics procedures. The person pressing the point responded by linking the care for the other to the care for the self: "If it was me or you, what would you want have done?" he asked and urged that this should be the question team members ought to ask themselves on a case. Despite the potential conflict and tensions in these stances, he concluded by saying, "We have to save lives, even before the dewar."

In a casual situation, when a colleague remarked that a certain acquaintance was on his "list of three favorite persons in the world", I jokingly asked the lead researcher if he too had a list of three favorite persons. The lead researcher responded in a serious tone: "No, I have a list of 7 billion" – referring to the equality of all lives he is out there to save. Just to reinforce this with another example, take GF, a researcher with a Buddhist past who quit school to dive straight into the work he thought "really mattered". I talked to him right as he and his transhumanist biotech colleagues were launching their company, soliciting venture capital funds. There was hesitation and debate about the implications of going that route, rather than keeping it small, under control, garage-based. GF in particular seemed to have some misgivings about the "VCs". When I asked him what was making him hesitate, he said: "They may share some of our values, they're *sort of* transhumanists, maybe they really are, I hope so. They don't understand the science but they had a due diligence person. He obviously understands the science. They are not a biotech VC firm. They're an internet VC firm that wanted to get its feet wet in biotech. My misgivings are that I can't see these people sitting around ever saying, 'how can we save the world?'"

I find no reason to doubt that immortalist claims about the good of life extension are genuine (even if they are consciously exaggerated for instrumental effect). Too many immortalists – especially biotech researchers and Singularitarians – come into the field with idealism, moved by a speech they saw, an article they read or the idea of eliminating suffering from old age: "I saw the april 2005 cover of the MIT Technology Review. With Aubrey. And it was like, I read the article and I was like, 'ok I'm going to work for this guy. This is obviously what I was supposed to do, this is why I came to college, this is why I became a scientist.'" Life extension framed by morality is a motivator. The researcher GF, like many others, says that his "own personal survival is not the real motivation" behind the work, that the "imperative [is] to alleviate suffering through extending healthy life."

On one level, it is easy to see how the moral imperative of saving lives emerges logically from the position that death is not a natural or inevitable end to life – the basic immortalist premise. Indeed, there is, immortalists argue, nothing more natural, nothing more rational, than wanting to stop "premature" deaths, and fight for more healthy life rather than an end to healthy life.

The moral logic of Immortalism is tied to "rationality" on one end, and to "naturalism", or biological facts, on the other. Biologically, it is said, this is what every organism does: survive. You might think you don't want to live longer, but you still look in both directions crossing a street and if a car comes close you jump out of the way. Survival is built in biologically, through evolution. If you don't have that instinct, you die quickly before you reproduce; whereas the instinct to survive is passed down the generations. The Maximum Life foundation takes this to its "logical" conclusion: "Every life form fights for survival. That's how each evolved. Therefore: The Purpose of Life is, and always has been: To Delay and Avoid

Death." This jump to biological purpose is a crucial step for Immortalism as a movement: one prospect that has galvanized many immortalists around technological intervention (and is producing what I will later call a science-based cosmology), is precisely the idea that there is purpose in nature and that we are and can be part of the direction of that purpose (directed evolution).

But to extrapolate from (a purported) biological instinct to a singular, universal *purpose* is a version of the naturalistic fallacy, imputing an overarching value to a range of natural facts. Equally, the relationship between individuals and the species in terms of survival is more complex than avoiding a speeding car. On a species level, evolution has, thus far, not been averse to death at all. Reproduction is the key to adaptation, but, on a species level, once that happens, biology has little use for the older generation and if death is the consequence of reproductive uselessness, so be it. What's more, individuals often are prepared to sacrifice themselves, if it means the survival of the group. So if there is an instinct that triggers us to jump out of the path of a car, there also must be an instinct that tells us to fight to our own death in order that others might live. The point is that notions of survival need finer linguistic and biological nuance.

On the one hand, immortalists and transhumanists collapse the traditional nature/culture divide by claiming that modern technology is as much a part of nature as a bird's nest or that human intervention into death is not any less natural than into disease; on the other hand, they claim the language of biology, and especially evolution, in order to "naturalize" their cultural values over others, to frame their desires as more in tune with nature and therefore more rational than others. References to biology serve to immediately remove an argument from suspicions of human bias and the hermeneutics that language itself introduces in the interpretation of biology.

But their "language" of biology is not the same as "biology's language", and death is very much central to biology's own grammatical forms.

The tendency to frame Immortalism as unavoidably and obviously rational makes most people who are not in favor quite irrational in immortalist eyes. Like many other immortalists who are constantly seeking a satisfying answer to why more people are not involved in life extension, TK rhetorically recasts his bafflement in terms of "a different question: why does everybody else want to die? I really can't tell you why, I just consider it irrational. And also out of tune with intuition. Like I would feel terrible going to [another job] while I know that my body is falling apart, and that everybody else's body is falling apart. More life, that's rational, that's also intuitive. It's just what fundamental values are: very convincing without needing much explanation."

Without having contemporary Immortalism in sight, a number of philosophical arguments have long countered the notion that extended lives are *necessarily* good (see essays in Fischer 1993). A line of epicurean arguments holds that since the person after death is no longer present to experience any harm, then death cannot be said to harm the person. Ergo its elimination is not necessarily a good in the sense that it forestalls harm to a person. Another line of argument holds that an indefinite life would produce boredom as the range of experiences that may be had is exhausted and thus with increasing life spans the enjoyment of life diminishes. Finally, one might suggest that personal continuity matters more in cultures where the bounded, autonomous individual is the model of the self, and much less so in a setting where personhood is understood and cultivated relationally (in the anthropological not strictly philosophical sense (Strathern 1995)). In a relational setting, *my* interests and values and desires are shared by others

and may be – should be – continued by others, who could even do a better job of developing those interests, and so a unified, bounded, personal self is not what matters in survival.

Immortalists have engaged some of these arguments in discussions, books and articles (eg. Schloendorn 2006). The basic response to the first point is based on an argument (made amongst others by the philosopher Derek Parfit) about future projects and future selves. It argues that death cuts the ability of a person to have future projects, which may bring joy, and thus death as a deprivation of joy does harm a person. Additionally, in the future, we will have extended our psychological and physical abilities to explore and experience joy and thus would not feel boredom as quickly as some have suggested. To the contrary, the experimental ethos of Immortalism holds that one of the benefits of an open-ended life is an open-ended self, the endless possibility to create new forms, new versions of the self. In the future, the unlimited exploration of the world and the unending cultivation of self or personality will be even more fulfilling, more exciting than it is now.

I will not enter the debate on philosophical grounds, nor on grounds of a sociological ethics of the future that rely on predictions over resource distribution and scarcity, moral corrosion and social disturbances (for such a critique see Turner 2009). What I want to explore is the *condition under which a particular view of the value of life has become possible*, *is getting justified or framed, is put into practice and gains currency*. That particular view insists that life is good as such and that *more* of it is better – which raises at least two questions. What is meant by life? what is meant by good? I will assume for now, as immortalists do, that life can be unproblematically characterized as " being alive". So, according to immortalists, what is good about it is simply that "from being alive" a person has a chance to "gain happiness". Such an argument, then, is "intended for those many more people who can expect to lead, on the average,

lives that are worth living" (Schloendorn 2005:194). Lives that are worth living are those lives "in which happiness outweighs misery". Schloendorn "believe[s] that most actual people's lives fall into this category"; this latter belief is reached by taking the total numbers for suicide to be an indicator of general levels of personal happiness: if people were that miserable, he says, more people would be committing suicide. Since they are not killing themselves off, their happiness must be greater than their misery, so we can say that a lot more life will bring them, on average, a lot more of the happiness they have. This is another fallacy that confuses a well-known social fact (suicide rates, the first ever social fact!) with a personal, rational or natural one. At any rate, it doesn't matter if that is not the case because, he argues, the argument also applies "to those whose life has never been worth living, if there is reason to believe that this is going to change in the future."

And there is reason, according to Schloendorn: "A person from one of today's first-world countries can probably satisfy more of her desires than a citizen of the Roman Empire, who could in turn satisfy more desires than a cavemen from the last ice-age." Faith in the materially improved future, the progress of history towards better lives, is a working assumption all across Immortalism, from De Grey and Kurzweil to CI director, Ben Best, who writes: "The progress of civilization has been toward more freedom, more justice & more democracy for more of mankind. This progress is likely to continue and accelerate."

This requisite optimism is a disposition influenced by social structure, factors such as class or gender that immortalists themselves tend to largely ignore. Sociologists and psychologists have studied optimism and pessimism but mainly in terms of their impact on behavioral outcomes or achievements such as educational achievement or health (Scheier and Carver (1987, 1993). All those studies consider the affective dispositions of optimism and pessimism as personality traits

since it is argued that the dispositions seem too consistent over time in a given person. Yet, this argument is made with virtually no research on social structural variables related to the dispositions. It seems likely and reasonable that since social structure impacts access to power and resources to shape the world, and since optimism/pessimism are related to the perception of an ability to change the outcome of a given situation, so social structural disparities would have an influence on these dispositions, possibly as antecedent influences. Social structure has been found to have significant influence on other so-called personality traits, such as self-esteem and a sense of control (Rosenberg & Pearlin, 1978, Downey & Moen 1987, Ross & Mirowsky, 1989). In one of the only studies examining social structural as a basis of optimism/pessimism dispositions, Burant (2006) finds that higher pessimism correlates with social structural factors such as lower income, being female and being non-white.

Schloendorn like others (Kurzweil 2005) sees history moving towards a better overall state, both as an objective historical fact (this is what history has been up to so far!), but also in terms of a subjective, perceived state for us humans, delivering a greater "satisfaction of desires", considered to be "an important aspect of happiness". Psychological studies cast doubt on the easy equation of happiness with satisfaction or well-being: people often trade happiness for other aspects of well-being such as "meaning", "positive relationships", and "freedom" (Ryff 1989). Aside from its naïve view of satisfaction and happiness, this strictly utilitarian view of happiness also neglects studies that suggest a wide range of influences on self-reported happiness, including status and *relative* income, which imply a comparison of one's own state with what others have; marriage, religion and health; as well as social structural factors such as race (in America), gender and age (Easterlin 1974, 2005; Clarke et al. 2003). In fact, the surprising thing to note in relation to the immortalist position is that recent studies seem to indicate that whilst

self-reported happiness in the West and many non-Western countries declines through early middle age, it actually begins to turn around later in life, with people in their 50s and 60s reporting much higher levels of life satisfaction than people in their 30s and mid-40s (Stone et al. 2010).

Ultimately then, miserable or not, what grounds the 'life is good, more life is better' logic is a blinkering of social structural influences on life values and decisions and a particular view of the future, rose-tinted by technology *and* progress in which most people will be able to count on gaining happiness. Technological development is viewed to be part of an inevitable march of progress, a teleology, which has made human life progressively better. Additionally, any such progress is now thought to be dependent on entirely technological innovation.

It goes without saying that these views of progress, coming from a position of privilege in the global social structure, non-chalantly erase the vast gulfs of difference between classes and regions of people – the billions who die of simple preventable diseases such as diarrhea or socially induced problems such as starvation or war. Whilst figures from the UN triumphantly claim that 1 billion people are now 'middle class', this means that there are 6 billion who are not doing so well. Inequalities in life expectancy between rich and poor have increased since the 1980s (Moser et al 2005), the same period during which income inequality has multiplied. To reverse Ben Best's myopic statement on world welfare, for the greatest majority of the world's population, "more injustice and more misery for more of mankind" would be an equally apt description of human history's unfolding. As I said, my intention is not to dismiss the immortalist position. What piques my interest in the immortalist arguments about the value of life is what is being framed out. What possibilities are being denied? What actions are dismissed?

In an interview with Schloendorn, I raised these questions after he pointed to a number of people sitting around us in a café, noting how happy they are.

A: Right but there are also a lot of people who are, you know, on balance, more in a state of misery than happiness. There *are* those people.

S: Yes, and some of them do commit suicide eventually, and that's sad and I can do nothing about that.

A: Some also die from ridiculously stupid little social causes, like starvation. Those are socially created right?

S: Well let's say they got fixed in some places, but not in others. Like the default is there. It takes effort to overcome it and I guess some regions are in pretty bad shape and pretty much hopeless. Because of what's in place elsewhere.

A: Hopeless? Well it needn't be hopeless. It's not any less hopeless than fighting ageing.

S: Yeah right but it's clear that millions of people more will die from starvation and there's nothing we can do about it, that's what I mean by hopeless.

A: Why not, what do you mean ‘there’s nothing we can do about it?’

S: Well, if every billionaire in the world decided to donate their fortune tomorrow to save Africa from starvation, they couldn’t do it, there would still be millions dying. That’s all I’m saying by hopeless.

A: Well, they could live a lot longer if certain structures were in place that didn’t make people hoard, that let big agri companies hoard their grains in order to keep the prices the same before feeding it to people who are starving, for example.

S: Right ok yeah

A: I mean there are definite things one can do, that save millions of lives from expiring prematurely, not for living forever.

S: Absolutely and even if we couldn’t save them this second, the fortune of all the billionaires in the world could still save an infinite number of lives in the long term.

A: Sure, so it’s not ‘there’s nothing we can do about it’…that’s…

S: No I'm not saying there's nothing we can do about it…just saying we can't do it tomorrow and that's all I meant by hopeless.

A: Hmm, right. We can't do it…we can't stop ageing tomorrow either.

S: Right, that makes things, both things, very much…

A: Hopeless…

S: Right, it is, sure, of course…probably none of these people I just pointed to can be saved from death and that is very very sad and I think deserves the word hopeless.

Perhaps this is the effect of being well-insulated by a certain kind of life in the "first world". Or perhaps it is the effect of being well-insulated from certain types of critique. But it is not a lack of concern or care as such. Let me re-iterate my conviction that, in their own way, immortalist researchers such as Schloendorn or GF, take their ethics of saving lives seriously. But for them, as for other immortalists, *saving the world, or simply improving it, making it (and humans) better, is linked exclusively to specific techniques and modes of intervention* (basically all that is made available through NBIC), *a particular view of the range of possible and predicted means,* and an abstract, reified view of "life" that fits within what Knorr Cetina (2005) has characterized as the "culture of life-itself".

When I pointed out that most suffering in the world happens to be social, due to poverty, famine, war, another young researcher, like Schloendorn and GF, conceded: "Well, yes that's true." Then he continued: "I can't do anything about that. But suffering from aging is also important and afflicts many. It is something I can help solve. People underestimate how far science has come."

For them, there is nothing to be done about the social problems, especially not through social means. A member of the Singularity Institute working on AI solutions to problems of human survival emphasized the point: "It seems to me that as a society, our political institutions, even our institutions for directing scientific funding and so on, aren't set up to deal with risks that are this tricky, and this uncertain." However, if superintelligence is achieved through AI research, then "if it's oriented around the things that we most care about, then that includes fixing them. I mean anything that we could be doing to help them [people who are suffering], like we could be getting them food and vaccines and so on. Those are problems we'd be solving by intelligence, they are problems that a controlled intelligence could solve. Instantly almost."

Despite a sense that the social cannot be entirely dissolved, since after all it is the very locus of all exchange, there is no conviction in any of this that social change or state interventions can yield anything positive. So a few experiments in remodeling social and legal frameworks are also being attempted, usually along free-market, libertarian principles. Perhaps the most emblematic example comes from the Seasteading Institute, mentioned above. No existing social models seem viable for these new libertarian pioneers and the only way is to start all over again – Thomas Paine Version 2.0; to reinvent the social, but far from government regulation. The seed money of a half-million-dollars was contributed by PayPal co-founder and libertarian market guru Peter Thiel, who has funded several transhumanist and immortalist projects, including some

independent DIY labs. Here venture capital takes on a new role, bridging DIY projects, technological innovation, social experiments, futurist scenarios, biological interventions and mainstream institutions.

What emerges from my discussions with immortalists indicates that the sciences, specifically the information-based sciences of the NBIC, are the contemporary sites of utopian longings because faith in other modern arrangements for improving life has been lost. Whereas state and society were key to previous promises of achieving a better life, scientific intervention, especially independent, DIY, non-institutional science, is considered to be the only medium through which human improvement can be imagined and promised, the only vessel that can "hold a promise"[109]. So how can we better understand the links between promise, progress, society and science? And what can these tell us about contemporary contexts? What can we make of the fact that science and technology are the privileged realm of promises today?

The Rise of Prediction as Promise

Some of the earliest American books to plan and predict a good life *within human history* were in fact religious in nature, and more specifically post-millenialist. For example, Jonathan Edwards' "A History of the Work of Redemption" (1739) and his student Samuel Hopkins' 1793 "Treatise on the Millenium" use "prophecy" to motivate dispositions towards a human-made

[109] There is a conflict in contemporary society's relationship to medical science and medical institutions. Sociologists and anthropologists have documented a growing suspicion amongst lay people towards medical technologies and approaches (Raman and Tutton 2010); at the same time, there are great expectations attached to medical developments and new technologies (Brown and Webster 2004:25). In most cases, these are separate responses. For example, people have moved towards holistic and non-technological medicine, abandoning faith in Western medical technologies altogether. But in the immortalist case, these apparently contradictory responses are part of a single framework: faith in science's abilities and the unlimited potential of technology does not contradict but is compatible with a general distrust of social and systemic uses of medical science as characterized by corporate medicine, big pharma, institutionalized research agendas, etc. This is perfectly clear in the DIY ethos of immortality research described above. Social institutions, including those of science, are approached with great suspicion. Which helps explain the affinity between Immortalism and libertarianism.

future. This was the beginning of the secularization of religious futures in the US. Quandt (1973), for example, tracks the secularization of "redemption" in American culture, with Dewey being the perfect case study: a hybrid protestant who changed into a naturalist, he interpreted revelation as the ability of man to progressively discover greater truths and the full meaning of life.[110]

How do the functions and practices of promise change as they are secularized and disenchanted? What kinds of *other* promises have been supplanted or displaced? What role does prediction play in structuring unknown futures? Without promising to answer any of these questions, I want to approach some of them using the concept and studies of utopia as a refracting lens.

Though it is frequently stated that the new technologies and sciences are utopian, the term is mainly used as a passing adjective, closer in meaning to "optimistic" or "inflated claim" (hype), than to an overall vision of a desirable future. Utopia is also evoked by frequent reference to notions of perfection and perfectibility (Kass 2003; Kaufman and Morgan 2005; Knorr Cetina 2005) in the bio-sciences with their ability to intervene in unprecedented ways into "life itself" – to enhance what is given by nature. But the reference to perfection seems to apply with difficulty to the new sciences, despite their idealism and excitement, probably because it is misplaced or dated. From a Christian context in which human or individual perfectibility came to be considered as both desirable and possible, to be achieved through a particular set of dispositions, practices and disciplines, the idea of perfection then informed enlightenment notions of social progress, human advancement and utopian projects (Hansot 1974). However, that modern shift

[110] Another interesting transformation analyzed by Quandt is the channeling of millennial expectations into commercial materialism and patriotism. Nydahl (1981) also comments on this, linking convictions regarding the millennium to the even greater conviction that it would come in America.

from perfection to progress has probably been subject to another shift, if not a displacement. Hogle (2005) thinks of it in terms of "upgrades", where bodies are treated as an integrated unit of technology and biology subject to control and design, and therefore periodic improvements. The term most frequently used in the literature of information-based sciences is *optimization* – which I will explore in the next chapter. In this mode, there is no end state of perfection. There is, in the Weberian sense, an endless progress, where everything will be surpassed, everything will become obsolete as it improves itself.

When utopia is evoked in the anthropology of science and technology it comes without an analysis of the history of utopias and the theoretical and scholarly work they have generated. This may in part be due to the long wake of utopias; in other part, it may be because most of the science-based contemporary utopias have appeared in the realm of or at least in the vicinity of science fiction and space mythology, which is automatically denigrated and regarded as at least unrealistic; and in part it may also be because no explicitly new, explicitly utopian communities, movements or texts derived from biotechnology have been identified. Immortalists don't identify their projects as utopian because it evokes idealism or a static religious perfection. But the sensibilities are not dissimilar.

About the genesis of the Extropy Institute, his invention of the term Extropia and transhumanist ideas in general, which he sees as the extension of enlightenment humanism, founder Max More has this to say:

> There's a strongly positive, optimistic sense about it. I coined the term extropia because utopia is literally nowehere. And utopia is very static. Nothing changes in utopias. Extropia is more of a process. When you get there you realize there is

somewhere better to go… there's definitely a strong vision of better futures, but not of perfection. That's a very un-transhumanist idea.

Utopias are commonly seen as static, fictional 19th century ideals, or failed social experiments from the 60s. Yet, immortalists and transhumanists do in effect present new utopian visions – if by that we can mean that they specify a particular set of means, and relate those, as a system, to a greater end, albeit a vague one. It is in this sense that their ideas and texts can be analyzed in relation to other utopias, rather than the popularized view of them as a sort of rapture for geeks (Alexander 2003) – although rapture and millenialist views have themselves influenced social and secular utopian views especially in the US (Tuveson 1968; Quandt 1973; Nye 1999). And it is also in this sense that their views indicate changes in visions of possible means, ultimate ends and ideals of the good life.

A utopia starts from *a total system of thought,* one that indicates a rationally justifiable system of ideas and methods to legitimate and direct a transformation towards an ideal society, ie to drive it forward (Mannheim 2002)[111]. In classical terms, *a utopia presents a conception of the good life* (Goodwin 1978*) arrived at through a specified set of means that can create a general*

[111] I have taken this aspect of the definition from Mannheim, though Mannheim's own definition is not reducible to it. Mannheim makes class conflict inherent to utopianism, and suggests that utopianism always entails a total transformation of the present order. He adds that it is through the *rationality* of oppressed classes that utopias emerge; in other words, utopia is an inherent part of the history and development of class struggle. This is in part a response to Engels' critique of utopianism. Whilst acknowledging the precedence of the French philosophes and utopian socialists for their attacks on class hierarchy and injustice, Engels (Socialism: Utopian and Scientific) criticises them for being stuck in ideas. Saint-Simon and then Fourier and Owens developed bourgeois universal ideas of justice and reason rather than class-based, materialist analysis based on a 'scientific' history of classes and modes of production, and the material or economic grounds of the present; they tried to evolve the revolution or the future "out of the human brain", ie make it the task of 'reason' and 'will', rather than understand it as "the necessary outcome of the struggle between two historically developed classes" and the alteration of the modes of production. It seems, however, that Engels does not have an *analytic* view of what utopia or utopianism might be, but rather uses it as an adjective to refer to a contingent historical movement, a particular group of pre-Marxian socialists.

condition for fostering human well-being. In other words, a utopia generally contains both a plan and a promise, a way of getting to a desired future. As the structure of the future is secularized, without a final, eternal paradisiacal state at te end of time, so plan and promise take on more significance, becoming the key devices for cultivating dispositions and expectations towards the future.

Whereas utopias are *always spatio-temporally displaced* – ie they are not here yet, or we are not there yet – a modern utopia, at least, is imagined *within reach of concrete geography and actual history*. It could be an already existing place, just elsewhere in some as yet undiscovered, but definitely discoverable, corner of the universe (like the Americas, some remote island, or a far away planet); or it could be right here, in this very place, but in the future (for example, often there are dates attached – Mercier calls his "L'An Deux Mille Quatre Cent Quarante", "The Year 2440", whilst Bellamy's "Looking Backwards" takes place in the year 2000). Transcendent utopias such as paradise existed in mythic or sacred time, ie a time removed from earthly existence, but by the 19th century, utopias had gained what Manuel and Manuel (1979) call "theories of history" – that is, they were based on a particular conception of time which viewed the development of humanity in teleological terms, as a historical process, usually unfolding in stages (barbarism to civilization, animism to science), that inevitably leads towards greater improvements, greater knowledge and access to truth, greater happiness, and so on. Linked to the Christian ideals of redemption and perfectibility, this unfolding of history towards a greater existence is what then gets called progress (Hansot 1974; Goodwin 1978).

The time and space, as well as conditions, of *transcendent ideal places* are up to the transcendent power. For example, post-millenialists may do work on earth that would open their way to paradise, or even hasten the advent of a general paradisaical state, but they have no role in

creating or building that end state. In the Augustinian tradition, the ideal state could not even be conceivable within our paltry understanding of space or society. "Who can measure the happiness of heaven, where no evil at all can touch us, no good will be out of reach; where life is to be one long laud extolling God…" wrote Augustine. "On that day we shall rest and see, see and love, love and praise – for this is to be the end without end of all our living, that Kingdom without end, the real goal of our present life."[112] This clearly would apply to many religious utopias, but also to Platonic ones, which exist on the plane of the permanent ideal world, towards which we only *aspire*. Post-classical or modern utopias are not transcendent but are to be *built by humans (*Manuel and Manuel 1979). In the early case of More's *Utopia*, where the utopian island is merely discovered, already built, the society itself was created by a human, Utopus. Yet, it being the first modern utopia, based directly on Plato's Republic and aimed as a criticism of More's contemporary society, *Utopia* described *a desire* rather than a plan, as More himself said. Francis Bacon's *New Atlantis*, published in 1627, envisioned an advanced state in which humans live longer and could use efficient tools to procure their needs, but did not lay down a real plan of how we might get there. Similarly, Mercier's *L'An 2400*, published in 1771, envisions the

[112] At some point, however, this strict Augustinian separation of the city of god from the socio-historical city changed. Paradise was reinserted into history; or perhaps better, human agency and history came together again thanks to a reconceptualisation of paradise. This reinsertion of paradise into history has been attributed to apocalyptic and millennialist movements along with the reformation, which was imbued with them. Toward the end of the middle ages, report Frank and Fritzie Manuel (1972), eminent historians of utopia, a new concept of paradise fueled calls for political action. The vision of the book of Daniel combined with a brief passage in John's revelations suggested to some that the time of bliss and justice had to come about in this world, in a time not too far off. It was only a vision, a prophecy, but by projecting stages – dispensations – it implied that we humans could hasten the process. It generated great expectations. There were peasant uprisings, Flemish weavers set up free colonies like 60s communes, Taborites wandered naked without property or shame, followers of the Calabrian abbot Joachim de Flora drew up the outlines of an 'ideal society' and deciphered the biblical codes that would show them the way (Sibley 1971, Manuel and Manuel 1972, Noble 1999). Luther himself listed five historical stages in the fulfillment of prophecy and the reformation became part of that process, "a hastening of the great day of paradisiac bliss", as the historian Charles Sanford (1961) called it. Paradise was being smuggled into the affairs of this world as part of a dynamic vision of history and time, in which men could actively work to bring about a better future world. In all its varied iterations, the main thrust of the new millenialist paradise was the destruction of hierarchies – of feudal classes, gender roles, and social authority. Once brought down to earth, paradise turned out to be a pretty radical place.

world as it might appear centuries later. There is a sense in both that it is through the development of social institutions, institutions of science and improvements in technology that the described ideal states of existence would come to be – Atlantis after all is run by a research academy! But Bacon's is a lost city (no way to get there) and Mercier's is a future city (2400 seems impossibly far away, even now). While both of these utopian tracts already incorporate something like predictions, they come without a theory or mechanism that could get us there.

By the 19th century, utopias were being built around plans and predictions, founded on theories of history or analyses of past trends, as in the case of Kurzweil's charts laying out the technological development of homo sapiens sapiens from stone tools to tiny computer chips as an exponential curve. It's probably with Condorcet's 1792 *Sketch for a Historical Picture of the Progress of the Human Mind*, written at the end of his life while in hiding, that we get the first systematic display of prediction – that is, a fusion of the predictive capacity along with a (Hegelian) *theory* of human progress. Indeed, he consciously produced his stages of progress through an explication of what he calls "the predictive capacity", the ability to relate the past to the future. He states that an examination of the past allows the formulation of laws based on which we can infer – and plan for or build a theory of – the future. Thus, he outlines ten epochs of mankind, ending with the one he calls Epoch of the Future Progress of Mankind, during which inequality would end and human moral progress would start on its final path. Here prediction is wedded to promise and it may be no coincidence, either, that this is the first utopia to not mention god at all.

Condorcet's influence on modernity as a whole is considerable. Saint-Simon and then his student Comte followed Condorcet closely and it was out of this attempt at imagining a perfect human society of the future - the "New Social System" - that in fact Comte created his

philosophy of mankind and society and termed it "sociology" (Goodwin 1978). Thus, one might also cite utopias as among the conditions of possibility of the social sciences. Equally, Condorcet's specific influence on the development of American political thought, Federalism and the constitution, via his friends Jefferson and Madison, has been well-documented (eg MacLean and Urken 1992); it's not irrelevant to add here that the World Transhumanist Association has adopted Condorcet as an ancestor of sorts, whose quotes appear on their website.

Following Condorcet's history-based predictions, utopian tracts, once given to the rearrangement of geographical space and social units, began to incorporate more and more technological advancements in their imaginings of future societies (Segal 1985). Eventually this led to the rise of a non-fiction genre of *technological prediction* (perhaps better called, science non-fiction) in which new technologies are the main harbingers of social harmony and comfort. Technology was largely absent in More's *Utopia*, but it quickly put in an important appearance in Bacon's *New Atlantis*, where the tools of science and medicine are deployed in a research academy to achieve some of the ideal goals such as long life. Through the 18th and 19th centuries, new technologies become an increasingly important aspect of utopias, but they were hardly ubiquitous. Setting aside the agrarian and transcendental utopias like Brook Farm, even many rationalist utopias were not technology-based as such. Marx, Saint-Simon and Fourier placed emphasis on science, rationality, and the means of production, but the main components for achieving the ideal states were the rearrangement of social units, not, say, the development of a great superintelligent machine that would embody paradise. Such a proposal did in fact exist. It was described and mapped out by a German inventor and emigration advocate by the name of John Adolphus Etzler, who was once jailed in Germany on charges of "inciting emigration" (Brostowin 1969). Etzler's vision was to produce a single machine that would harness the

powers of nature, such as the sun, the wind and the tide, to produce everything a decent society would need, thus freeing men of labor. With the aid of proper education and an egalitarian non-exploitative society, the citizens then would be free to develop their minds, engage in the arts and sciences, and even contemplate god. He lays out four evolutionary stages, with the fourth one leading to paradise on earth, where love, humanity, culture and nature's abundance would be in symbiosis. Life spans would triple and conjugal love would flower.

In 1831, along with his first partner and childhood friend John Roebling, a student of Hegel's, the inventor of "wire ropes" or cables and future builder of the Brooklyn Bridge, Etzler organized a group of German migrants to travel from Muelhausen to Pittsburgh in order to carry out his plans for, as he called it in the title of his book, *The Paradise Within Reach of All Men, Without Labor, By Powers of Nature and Machinery* (1977). This was not a book of fiction with character and story, but a pure plan, a utopian vision accompanied by blue-prints for a machine he termed the "Satellite", which by harnessing existing forces in nature, such as wind, sunlight, water, would relieve humanity from labor and allow it to develop a well-planned contemplative community, or Paradise. Etzler was both respected by and connected to a wide range of the expanding utopian communities being set up in the first half of the century; he knew Fourier and the American Fourierists, George Rapp and his millenerian group of utopianists called the Harmonists, and the Scottish industrialist and secular Utopian, Robert Owen, who was setting up his own economic utopia in Pennsylvania and arranged for the re-publication of Etzler's book back in England (Brostowin 1969; Nydahl 1977). A history as colorful as any of the utopian histories follows and, like many of the others, ultimately ends in failure: Etzler tried several times to build both the community and the machine but finances, disagreements, and loss of faith

by his followers prevented the completion of his projects. Roebling went on to build his bridges, however.

The point is that by Etzler's time planning and paradise had been fully fused. Etzler's paradise would fit a minimum definition of a technological utopia (Segal 1985): one in which technology becomes the best and main instrument for progress towards an improved world. But the ends of technological utopias – the ideal of perfection, harmony, equality, justice – nevertheless seemed like the same ends as those in non-technological utopias. Influenced by Hegel, Fichte and Marx, the German utopians, like a majority of other emigrant utopians, were largely socialists with a progressive theory of history. At the center of their thought was the secular idea of human flourishing, through easing the burden of labor, creating equality, and fostering the human arts.

At the end of the 19th century, there was a modal shift in technological utopianism: from setting up actual communities to merely writing about them (Segal 1985: 99-101). This resulted in a genre that dropped planning and replaced it with pure prediction. Technological prediction became a way of imagining, expecting and producing the future without resorting to fiction. HG Wells' 1902 book, *Anticipations*, is one of the earliest collections of this sort. Four years after the 1898 publication of *The War of the Worlds*, Wells wrote a non-fiction book forecasting the effects of technology on society in the year 2000 A.D. The book was a far cry from Wells' fantasy of Martian armies incinerating the world with their three-legged fighting machines. Despite a few insights about the future's faster delivery of news, improved weaponry, more efficient modes of transportation, and so on, *Anticipations* was a tame, unremarkable foray into social prognosis.

In 1923, the pioneering English genetecist J. B. Haldane used Wells' book as a starting point for an address delivered at Cambridge University. Like *Anticipations,* that address was set in the mode of prediction, though Haldane went farther than his predecessor in imagining technological prowess. His predictions included batteries for storing wind and solar power, the production of children outside the womb, and "a condition when any two persons on earth will be able to be completely present to one another in not more than 1/24 of a second." Haldane also went to great lengths to defend the virtues of communism, especially for scientists, who he thought should be impressed by its materialist basis. A version of the address was eventually gathered into a book called *Possible Worlds*. Because some of his predictions appear to have come to pass, Haldane, like Condorcet, is claimed today as a progenitor by the World Transhumanist Association.

From the turn of the century on, there is an exponential explosion in *technological* predicitions, as this becomes the central mode of thinking about and organizing the unknown future in a secular age. David Nye's *Technology Matters* (2006) cites a survey that documents 1500 predicted technologies between 1890 and 1940 – that is, from a little before Wells started writing science fiction to a little after Haldane published his book. That number has ballooned since.

That technological prediction, as a mode of assessing, projecting and expecting the future, rises up through the history of utopias is not insignificant. Prediction was first deployed as a theory of history – remember Condorcet – in order to project how an ideal society, a good life, might be planned and arrived at. Most modern utopias had an end-state in mind, though usually a vague one glossed by phrases that projected such general conditions as perpetual peace, equality and justice, the end of suffering, pleasure and human flourishing, development of the

arts, and even the contemplation of god. That was their promise. In laying out their plan, the means of getting to the promise, most modern utopias envisioned or predicted transformations through three facets of human modern life: through the rearrangement of *social units* such as the appropriate means of production, the proper (re)distribution of goods, the provision of education and knowledge to all, the rearrangement of kinship; through the power of science, in revealing a unified world subject to control and calculation, and helping shed the illusions of religion and other primitive cognition; and finally, through the rule of law and the guarantee of security by a just state. These are the three S's: Society, State and Science, or what HG Wells in his late utopian tract, "New World Order", called "The triangle of collectivisation, law and knowledge", which he added, "should embody the common purpose of all mankind." In a sense, **secularism rides on the set of promises tendered by science, state and society**, this triumvirate of non-religious institutions, the three S's of the secular (Casanova (1994) parses it as science, state and economy). Concomittantly, a greater or lesser focus on any one of these is a function of the faith in the promises tendered by the others.

The rise of technological predictions decribes a shift away from two of these S's, the social and the state, as technoscience becomes its own independent realm of transformation and promise, a turn that can be clearly seen in the brand of utopianism carried by immortalists, transhumanists and other futurists. Before I turn to this, it will be useful to briefly say something about these key terms: promise and prediction.

Promise, of course, has theological roots, denoting divine assurances of future good or blessing. In its secularized version, according to the OED, it means "A declaration or assurance made to another person (usually with respect to the future), stating a commitment to give, do, or refrain from doing a specified thing or act, or guaranteeing that a specified thing will or will not

happen." In this version, it is not *necessarily* the promise of future good, as it is in the biblical tradition. It might be added that the subject holding the promise does not need to be a person: we think of promises as embodied by objects, plans, policies, institutions, theories and even temporal units (the promise of 2011 was…) So a promise has a subject through whom or which the present and the future are related, constituting an exchange, with expectations and sometimes obligations; but in a secular setting, the power and authority of the subject are not *necessarily* given. The secular promise is subject to the limitations of finite persons and finite knowledge.

A prediction can have an advantage over a promise: it can appear objective. Predicting the outcome of a game of chance may be random, since the game itself is built on that principle; but predicting the future of society or the development of a particular technology describes an unfolding that pretends not to be dependent on chance or the whims or powers of an individual. A prediction foretells a state, but the subject making the prediction is not meant to be an agent in the realization of that state; nor do predictions presume a subject, imply a commitment, or constitute an exchange. Prediction refers to the action of foretelling an event or a state of affairs, inferred usually from the past, and usually by reasoning, estimating that some event or state will come to be as the consequence of something. It requires, as Condorcet observed, theory, analysis, a mechanism and knowledge of past events (for example, weather forecasting or probabilities of a genetic mutation leading to a disease based on population studies). The term 'prediction' is often used in relation to scientific theories and observations and so may be thought of as the secularisation of prophecy, making the future subject to calculation and action. That is the authority of a prediction and as a result, predictions shape expectations in significant ways in a secular context, affecting everything from economic policy to medical prognoses to personal dispositions.

Today, the predictive act is mostly focused on specific, narrow matters (predicting the interest rate, the possible course of a disease, the size of the next transistor, the market success of a drug, or sunshine on Sunday). However, there are also predictions that are tied into existential matters: those secular-end time scenarios mentioned in the previous chapter, emanating from, for example, the chances of an asteroid crashing into earth, or global warming creating a series of catastrophes. Here predictions merge with promises, effectively promising the future as catastrophe – and therefore engaging us in a commitment to change things. So secular futures have produced two scenarios in conflict: progress and catastrophe. Modern utopias and modern theories of progress combined prediction and promise with the opposite vision: an optimistic march towards a better rather than catastrophic world. That promise also created a commitment to change things. Predictions and promises gain greater force when they are wedded together, when the secular authority of the former is combined with the social force of the latter.

The secular authority of predictions, especially technological forecasting, has made it the key mode of assessing, organizing, and experiencing the world. Predicting new technologies causes exhilaration and disappointment, raises fears and hopes, attracts capital, shapes ethical standards, leads to new laws, prescribes future action and motivates people and social movements. At one end, predictions figure in the present not as neutral projections of on-coming events but as prescriptions for action and thought. When Kurzweil, the chief predictor of futurism and proponent of reverse-engineering the brain, writes, "We will merge with this technology by sending intelligent nanobots (blood-cell-sized computerized robots) into our brains through the capillaries to intimately interact with our biological neurons," (Kurzweil 2007) it is not clear how much is prediction how much is prescription. Given his authority and influence, there is a good chance that research will be directed precisely along these lines.

At the same time, predictions figure in the present as a series of positionings and repositionings, considerations and reconsiderations, that in themselves create a history which may be referred to, even when it is – or perhaps because it is – a history of unarrived at events, of past predictions, events often suspended, pending, expected and possible but not always realized. In this way, predictions and prognoses themselves *become* history, both in providing origins (bomber planes were predicted by HG Wells in 1902) and providing reference points regarding the future but situated in the past. Thus sci-fi or technological predictions from the 20s can be referred to as histories of the future. And what is important is not so much that they were histories, in the inert sense, but that they generated expectations.

This was brought home to me at Terasem's conference on the "Law of Transbeman Persons" when AI guru Marvin Minsky warned from the podium that, "There is quite a history, in science fiction, of computers breaking loose and controlling the world." Throughout the formal presentations and informal discussions, references to works of science fiction, from *Forbidden Planet* to *Colossus* and *The Two Faces of Tomorrow*, were abundant, because of course there were few other kinds of cases to draw upon (the conference itself had been modeled on the 1958 colloquium on the law of outer space, which was itself an anticipatory event that eventually turned into a set of laws regulating the entities humans sent into outer space). The works of science fiction had become aides in imagining possible scenarios wherein AI devices, intentionally or unintentionally, might pose threats to human societies.

Minsky's stark juxtaposition of history and science fiction, which triggered no reactions from the attendees, reminded me again of the entanglement of science fiction with the contemporary culture of technology in general and of Immortalism in particular. Science fiction, as one mode of prediction, has inserted itself into the real and the present by necessarily

becoming part of the armature of prognosis. As a protagonist in Don De Lillo's *End Zone* says, "You have to balance history with science fiction… it's the only way to keep sane."

As science itself has become more and more future-oriented and dependent on predictions and anticipations, rather than discoveries, it inevitably has become wrapped in stories. That is, it has become science non-fiction, where expectations themselves become the ground of experience. In futurist communities, the disappointment this can engender has been turned into a joking lament about the predictions and promises they have lived with since at least the 60s: "We don't even have jetpacks yet."

In this context, technological development is reified – it becomes its own end. Recall that in modern technological utopias, the improved mechanism is the means of achieving other goals: liberating people from labor or developing their capacities in order that they be more fulfilled in satisfying their other – more human – potentials and desires. But, as technology has become reified, technology has come to stand in for progress as such. Predictions posit new objects or ways of doing things, but do not explicitly project a new politics or new societies, and to the extent that they expounded on social or political transformations, they only do so as the side-effects of those technologies on society.

Futurists do not say, "We don't even have adequate justice or health care yet;" they say, "We don't even have jetpacks yet." It does, one might suppose, depend on which is to be valued more.

Kurzweil's predictions regarding the future are instructive in this regard. As described in chapter 1 and further discussed in the last chapter, Kurzweil's vision and the whole momentum of the singularity is built on predictions, based on the past, of the development of computing power, the reduction in chip size and increase in speed. This is placed in a historical context,

wherein what is being tracked through these technological developments is not just chip size or speed, but the development of intelligence and complexity in the universe. Such development is projected today to be the destiny of the universe, taking us to a world in which with the aid of immense computing power we can enhance our human capabilities to superhuman levels. Though not all Immortalists, futurists, or transhumanists, let alone regular humanists, agree with Kurzweil's projections and predictions, his work is illustrative of a larger trend: prediction and promise have merged in the figure of technological development, such that technological development serves as the index of all better futures. What has been dropped in the calculus is any sense of social improvement.

To the extent that for them the social is no longer the privileged site of human progress, immortalists, transhumanists and other futurists are not modern. True, progress as a vision of history is a distinctly modern vision. The englightenment's vision of progress in turn bent history towards the future, towards a world to be made by man. In this sense, Immortalism and transhumanism and the other post-humanist movements are continuations of a secular modernity. But secular modern utopias – the liberal, communist or even the technological kind – had the social as the key site of transformation. It was through the transformations brought about by the state, society and science (the three S's of modern secular promise) that human transformation would be effected. That was the way the notion of the 'good life' was projected in a modern secular world, rather than classical or theistic worlds. Again, it is true that both science and the future were thickly mixed into the enlightenment visions of progress and utopias to come; and it is worthwhile remembering that many of the goals that today seem futuristic in a contemporary sense had roots in, were goals of, enlightenment utopias too, including lives radically extended through science. But the dominant model for achieving a good life was based on a social model –

on the transformation of social units. The promise of human improvement was not individual, though it was the individual who would also benefit through the management of social entities. Social and environmental manipulation would improve not just the individual, but all of society, all its people – hence the idea of improvement, through revolution or reform, was translated into various settings, factories, schools, prisons, hospitals, all the institutions that were being taken over by secular refoemers and the new modern ways of thinking (which inherently excluded the church). It is the range of promises and hopes embodied in these social transformations that have been given up on.

What is left, then, is no longer human life as a social enterprise, but human *life* as such. Future lives as imagined by immortalists are noticeably featureless. Though it is always asserted that future lives will be enhanced, richer in intellectual fulfillment, affect and enjoyment, there is no real content given to them and very little social context. They are also remarkably similar: enjoyments of life in the enhanced future include mainly the opportunity to learn more and travel more. This explanation from a cryonicist could stand in for countless others: "living all over the world, and learning all the languages and exploring life and there's so much to learn and there's so much I don't know and would like to know… I just enjoy… I enjoy life anyway, it's hard to separate… life for me does involve exploring and learning, it's hard for me to separate new things to do from my enjoyment of life, I can't even question the fact there'd always be new things to do. I can't understand people being bored."

Robert Ettinger, commonly regarded the father of cryonics, has written several books about the technologies that will transform, as the title of one of his books has it, "Man Into Superman". When I asked him about imagining the social conditions of the future, he told me: "You know you can speculate all day long and what good's it gonna do you? Well speculation

can be fun, so if you enjoy speculating, then go ahead and speculate. If you get some entertainment value out of speculating, then go ahead and speculate. And sometimes of course speculation leads to useful ideas but we have very little control over it. When people ask me, "'what about the risks of waking up into a nasty future, or what about the problem of readjustment to a very different world?', I point out first of all that we were all born into a strange world. We were all born into a very strange place but we managed to adjust to it!"

The anthropological-sounding response may have it right about adjustment and human adaptability, but both classical and modern imaginaries of the good life referred to social situations where, as a result of justice, education and freedom, people could develop specific personal virtues through specific practices; they also envisaged general conditions under which people could develop greater social virtues such as fairness, precisely because fairness and equality would have become basic and general social conditions. Life was valued not initself, but as a function of its sociality.

In the immortalist ethos, life is valued in itself, as such, not necessarily for the specific context through which life is lived or the content (practices, knowledge) through which virtues of a self in a lived life are developed. The notion of the good life is replaced by the assertion that life is good. To reify life into an intrinsic value is to give it purpose in and of itself, regardless of its social context or purpose. But stripped of its social context, life is biological life alone and biological life is a matter of cells, of molecules and genes doing their work, incognizant of the abstract structure called society or any virtues it might impart or embody.

I am not arguing here that the quest to forestall death is pointless or that it has no moral value. Rather, I am saying that the immortalist stance towards it shows a particular view of life and how life can be improved. The promise of improving life through biotechnological

interventions into the matter of life takes precedence over, or holds greater promise than, improving life through social interventions – such as, say, providing clean drinking water or improving food distribution. They are certainly different kinds of intervention with different kinds of results – the former would not extend life spans, but would prevent billions of "premature deaths", to quote the Maximum Life Foundation. In the mathematical-moral calculus of saving lives – one could even add up the life-hours of relative happiness! – that would be an equally noble approach. That it is *completely* ignored in the utopian imaginary of Immortalism, is not a matter of rationality but an indication of two conditions: the elimination of the state and society as the site of utopian promises, which leaves science as the remaining purveyor of the good; and the molecularization of utopian imaginaries, by which I mean the notion that the good life can only be achieved through interventions on a molecular, or even atomic, level.

HS, a molecular biologist, cryonicist and transhumanist, who has also worked with non-profit organizations using technology to deliver goods and education to countries in need, sums up the position: "I don't have an instrinsic interest in molecular biology. That's not why I enrolled. There's a way in which I want the world to look and be, and molecular biology will be a big part of bringing that about."

Like technology, life is reified. Just as technological development is now its own end, so life is its own ultimate purpose. And as the two – life and technology – merge, so their ends will be imagined to coincide. This echoes beyond the futurist and immortalist projects, indicating a more common condition. Recent work in anthropology of the biosciences suggests that increasingly what is of value is life itself – that the focus is on the appropriation of life and the restructuring and reforming of the cell as the unit of life, and what, in terms of value, can be gotten out of it (Thacker 2005, Landecker 2007); the conclusions have been derived mostly from

the culture of the lab and/or illness, eg. patient groups formed around specific genetic diseases and attendant genetic interventions. In a slightly different and more general context, this shift has been characterized by Rose (2007) as a shift from bios to zoe – an idea prefigured by Arendt and then Foucault – which Rose calls "the politics of life itself". The biopolitical argument stemming from the writings of Arendt and Foucault has held that since the Greeks life, or zoe, and politics, or bios, had been kept in separate realms, that the state was given over to the governance of social life but was not assigned to interfere in the health of families or populations. Issues like justice were separate from problems like disease. The good life was good in so far as it was separate from concerns about bare survival. From the eighteenth century on, when the politics of states changed to a rights basis, to the protection of citizens, states also began to be concerned about the health of populations, in part because the population was both representationally and practically tied to the state and therefore the health of one seemed to indicate, both representationally and practically, the health of the other. Today, Rose argues, "the question of the good life, bios, has become intrinsically a matter of the vital processes of our animal life, zoe" (Rose 2007:83). In biopolitics, zoe and bios are collapsed into each other.

To attribute the relationship between life and politics strictly to modernity is a slightly narrow view of the relationship between health and governance, as anthropologies and histories of witchcraft in smaller state societies might indicate. But Rose's *politics of life* points out a further departure, away from health and illness regimes to regimes of life in which the goal is the optimization of life envisaged and acted upon on a "molecular scale" (2007:83) – a notion that has also been integral to a number of recent thinkers in this field, including Rabinow, Landecker, Knorr Cetina and Hogle. For Knorr Cetina (2005) the newer turn to the "culture of life" is fundamentally different from, even opposed to, enlightenment humanism, wherein human

rationalism and sociality would be the sites of perfection and it was through perfecting them that we humans would be improved, even saved. Now "life" has replaced "human" – what is sought is the perfectability of "life". But it is not fully clear what Knorr Cetina refers to by life: "life stands for an open-ended series of biological, psychological, economic and even phenomenological significations and processes." That covers a lot. It is broad enough to be almost useless. Nevertheless her observation that there has been a shift in the goals and sites of our interventions for a better future, of our utopias, and that the shift is based on the knowledge and language of biological sciences, helps us connect Rose's molecularization to larger political processes.

But the contention that biopower is now becoming molecularized – that is, taken from large administrative public systems down into genetic and molecular interventions – must be understood not only in terms of the management of the body by medicine or the production of biological knowledge, but also in terms of the larger vision of society and the collective future. That is, what has been molecularized is the politics of promise. If modern utopian promises relied on shifting social units, these new utopian imaginaries rely on shifting molecular or even atomic units. Whether it is the hollowing out of the social that has produced a reification of life, or whether a reification of life through the discourses and practices of biology has hollowed out the social may be up for debate.

Hype and Hope

In the study of science and technology, there has been quite a bit of discussion about hype and hope (Brown 2003), especially in terms of economic prospecting (eg Waldby and Mitchell 2006), personal and social expectations (eg Franklin and Roberts 2006) and ethics (eg

Habermas 2003). The cycle of future claims and promissory notes is certainly important to the unfolding of technological innovation in society, especially in the rapidly changing fields of bio and nanotech. Indeed, future hype, as Brown (2000, 2003) has suggested, is perhaps necessary to the work of technological innovation, for both practical and psychological reasons – for the twined movement of producing incentives and mobilizing resources.

Yet, future plans have always been important in raising capital, attracting followers, motivating people. What I have tried to argue here is that the grounds for promises and predictions have shifted. The reification of technological progress has tied prediction to promise, and created new grounds of experience, such that expectation has become integral to experience. It is because of this play of prediction and promise that hype and hope are salient today. They are built into the liberal democratic system. The history of utopias is clear about the extent to which utopian idealism gave rise to the western democratic model and western democratic theory. The utopianism of Condorcet and Saint-simon influenced not only Madison and Jefferson but also Marx and Engels. Both social science and western political theory arise out of the prediction-promise combo of utopianism. Indeed, the western democratic model is fundamentally inseparable from optimistic utopian projections of material and moral progress - and the American one in particular, having derived a good amount of its ideology from millenialist doctrines of redemption (Tuveson 1968), is most unprepared to accept evil, suffering or decay as an equally likely and parallel narrative alongside progress. Few are the Nietzscheans who regard suffering and evil as an in-built affair of the world. On the whole the liberal west and most of its populations, including social scientists, "cling to some belief in moral progress" (Brinton 1965) and material improvement; western democracies see themselves as secular utopias, rising out of the great promises of equality of opportunity and universal happiness – the histories of a

Hiroshima or an Auschwitz appearing as an aberration, an irrational and unlikely interruption. One could suggest, then, that Western democracies are a utopian genre, systematic allegories based on predictions and filled with promise. The triumph of an apparently single system after 1989 and the triumphalism of capitalism, its appeals to naturalism (self-interest=market=life=evolution=progress), should not blind us to the underlying anxieties and pessimisms and fissues that run through the system, anxieties that come from the elimination of the collective or social good, the falling away of utopias and the rise of end-time scenarios in various registers. Doubt and anxiety are embedded in the frantic way forward and as doubt creeps in to the promises, the utopia demands louder and greater promises to hold the whole thing up. State-led and social progressive utopias of the enlightenment have been stymied and frustrated, so technoscience has come to represent the last remaining vessel carrying forth the promise of the secular. This figures as part of a tension I have tracked form the beginning, the increasing dependence of political secularism on materialist and scientific justifications for its premises – for the foundations, in a sense, of the whole edifice. When science and technology are the privileged, perhaps only, realm of acceptable promises, hype becomes an important means not just of motivating the economy or labor pool of scientific development, but of keeping alive the last promise (utopia) of secular politics.

Chapter 6
The Informatic Self:
Optimizing Brains, Space-Casting Souls

The limits of some of the older rationalist and materialist dualities that together defined a secular ontology have become apparent largely through science itself, as a result of technological innovations, theoretical developments and scientific discoveries. How does one maintain a distinction between animate and inanimate on a sub-atomic level? Or on the level of systems that seem to behave like organisms? Or in robotics? Between life and non-life when one has emerged from the other? Or when codes and programs are supposed to "run" life? How does one make sense of matter and the immaterial in quantum entanglement, superposed states or wave functions? How does one distinguish between mind and body, phenomenal and physical states, on the level of neurons firing or synapses connecting? Or in view of physico-chemical reactions that affect memory, identity or feelings of empathy? On the other hand, how does one avoid distinguishing between these two sides? There is always, it seems, a further fact requiring some elucidation, some new terminology, and the threat of these further facts is that they point to the limits of current ontologies and so bring up the question: is there another ontology possible?

Today, there is a general restlessness about such matters. Scientific theories have not declared new ontologies as such, but from the cosmos to the cell they do seem to be proposing structures and functions that fit uneasily with materialism properly understood and the ontology of physics is implicitly upended frequently as old models are supplanted with new theories and concepts of time, matter and space. Only a few explicit calls for the expansion of the ontological field have been issued by scientists, philosophers and theorists (for e.g. Stengers 2011; Coole and Frost 2010).

Questions regarding the limits of materialism are raised most cogently and poignantly in relation to consciousness, that is in terms of the duality between phenomenal and physical states. In general, conscious states refer to "perceptual experience, bodily sensation, mental imagery, emotional experience, occurrent thought" and so on such that "there is something it is like to see a vivid green, to feel a sharp pain, to visualize the Eiffel tower, to feel a deep regret, and to think that one is late. Each of these states has a *phenomenal character*, with *phenomenal properties* (or *qualia*) characterizing what it is like to be in the state" (Chalmers 2002). The brain as a physical system is said to be composed of biological and mechanical parts that behave in a law-governed way. The question is whether and how these are reducible to each other, as it seems that there are facts about consciousness and phenomenal experience that are not deducible from physical facts. Although theories vary greatly, scientific and philosophical opinion is agreed on one thing: we do not know what the relationship between phenomenal and physical states is. On one side, if the phenomenal aspects or experiences – the qualia – are reducible to physical states, then there is no problem with materialism at all. If they are not reducible, then it clearly requires an expansion of the materialist ontology, which given the intractability of the problem so far cannot and has not been dismissed (for a good review of the positions see Chalmers 2002). Aside from claiming that the issue is far from settled, I make no other claims regarding this subject.

Anthropologically, I am interested in how this unsettled or unresolved domain is negotiated, managed and occupied by various people with different claims and interests. These issues come to a head in extended AI projects as well as the larger ambitions of neuroscience, as they not only map and dissect the brain, but reconfigure it physically (reverse engineering the brain, or emulating the brain) so it may potentially function as a "mind". Through Immortalism's AI modality, I will examine the concept of information and its

deployment in this general fluid field of negotiations between mind and matter, contending that in its ontological indeterminacy, the concept of information functions precisely to spread into the unresolved spaces without altering the materialist ontology beyond the recognition of science. Information, after all, has gained its meaning and history *through* science. In use, the concept enables and activates specific techniques, practices and dispositions which together form what I call the informatic self.

If *physical* immortality is the goal of Immortalism then the person would have to be extended physically. That implies delineating and locating the person, as well as the physical; it necessitates determining physical correlates for identity, memories, affects, choices, desires, feelings and subjective experiences (whilst assuming that any such correlate also has a causal connection with phenomenal states). There are two ways to conceive of this: to conceive of the subjective person as dependent on the biological platform it currently seems to occupy and so try and extend that particular configuration of matter, which is the biogerontological approach; or else to contend that what matters about the person is *substrate independent* and to try to identify those properties that matter and make them operational in non-biological substrates – the silicon of computer chips, for example. In both cases, Immortalism largely has banked on some notion of information, positing it to be constitutive of mind and reality in ways that I will explain.

Anthropologically, three aspects stand out. Firstly, resolved or not, these theories and premises as they stand have observable consequences regarding social practice, self-discipline and self-constitution amongst immortalists. Secondly, whilst immortalist positions are starker and appear more marginal, they are in effect very close to those of all the information-based sciences, since they sprout from the same roots, and therefore can say something about a larger segment of US and technoscientific cultures. Finally, attempts to physicalize the mind imply

more than an account of how human minds work – they say something about the relationship between subject and object, between mind and matter, between the very stuff of the universe, an account that also holds a different promise, the promise of a cosmology, one that can project a place and purpose in an apparently purposeless universe. I will mostly deal with the latter two topics in the final chapter. Here I want to follow immortalists as they step beyond the reification of life outlined in the previous chapter and develop *informatic selves*. As they try out new vocabularies and concepts to move beyond the limits of some older dualities – animate-inanimate, human-nonhuman, subject-object, natural-supernatural – but *without* departing from materialist premises, they end up deploying concepts such as information (or pattern) that are ontologically unstable, that seem to perform a sort of transonotological co-dependency, such that the material and immaterial come to both oppose and need each other.

Care of the Brain

There is a grave in Leechburg, PA[113], bearing the body of Jim's dad. Jim has never been to the site. He traveled back home to attend the funeral a few years ago but never made it to the cemetery. So whenever he goes back to see the family, they ask if he's been to visit his dad's resting place at all and he responds, "No, my dad's in Arizona. What's there in Leechburg is a shell." He says, "His body is there but his brain is in Arizona."

His brain, to be more precise, is at the Alcor Life Extension Foundation, perfused with a cryoprotectant solution and stored in Liquid Nitrogen (LN2) at minus 196 degrees Celsius. Along with almost 60 other "neuro" cases, Jim's father's head is being cryopreserved for

[113] As always, names of people and places, as well as some details, have been changed in order to protect the identity of informants.

possible reanimation in the future, hopefully with memory and personal identity intact, or at least recognizably continuous and functional. Alcor began doing neuro cases in the late 70s and continues to be the only cryonics facility that offers the option. For those who take the neuro option, the body is disposable and replaceable; it may be returned to the family to be cremated or disposed of in any way they wish – as with Jim's dad's body, which was buried, headless though otherwise in a traditional manner, for the sake of the family.

What will serve in the future as Jim's dad's body, or his new "platform" or "substrate", remains to be seen. For the time being, according to cryonicists, there is a chance that his personal identity has not been irretrievably and irreversibly destroyed and therefore he has not fully ceased existence, retaining the possibility of personhood. Jim, for example, describes his father as "a patient at Alcor". When he emails me pictures of the brain during its cryopreservation process, the subject-line reads "Pics of My Dad". Like most cryonicists, Jim has a sense of humour about these things, but that doesn't obscure the fact that as far as he is concerned, and as far as the two organizations Alcor and the Cryonics Institute and their living members are concerned, Jim's dad is not to be thought of or treated as dead. His brain is not to be considered a thing or a person-less organ. It must be cared for as though it contained still some form of the person that was Jim's dad.

Not all cryonicists accept that preserving the brain alone will do the job of preserving personal identity, which is most crucially associated with having the same memories and personality. Some believe that there are crucial connections to the rest of the biological body that constitute the person's identity, including memory. However, like all immortalists, they do regard the brain as the principle seat of personal identity and, more importantly, regard the person, full body or head alone, as constituted by recoverable information contained in the brain.

This view of the relationship between information, personal identity and death, first formally articulated by nanotechnologist Ralph Merkle (1992), is neatly encapsulated by cryonicist Mike Darwin (2005) in an issue of the journal *Critical Care*: "The brain is a discrete pattern of atoms, each as effective as the next as long as the unique pattern of their arrangement persists. Presumably all of the attributes of the person are encoded in this lattice. This view allows us to view the person as 'information beings'… So long as that pattern of information can be recovered the person is not dead." Put briefly, as long as the *information* in the brain has not been totally destroyed, some future technology will be able to recover or reconstitute it. Whether or not that unique arrangement of atoms can be replicated on another platform is a different matter – certainly some members of the immortalist community believe it can, meaning that they believe that the self is only contingently biological. Either way, the self is understood in terms of information, as an informatic self. In this view, function and biology no longer provide sufficient criteria for the evaluation of death, so death – or its avoidance – becomes largely an information recovery and engineering problem quite aside from the vexing problems of animation or consciousness.

The informatic self collapses body and mind into each other as a particular arrangement of matter, which is called "information". Clearly, the concept of information – the work it does in these descriptions, more than the work it does physiologically, if indeed "it" does any – is crucial to this conception and I will explore the status, histories and possible meanings of information a little later on. Equally, though, it is in usage, through the practices and conceptualizations (as the ideas and pragmatics are being worked out), that "information" has been made visible and determinable, that its meanings and functions have emerged. So I will first

ask, how do immortalists actually imagine and constitute their selves as information beings? How does information work in immortalist formations?

If information as the arrangement of atoms in the brain is considered to constitute the self – the information being – then the retention and optimization of information would have to determine the parameters for claims on, and enhancements of, personhood or survival of identity. Which information, and how much of it, is necessary and sufficient for retention of personal identity – or its constitution – is far from clear. Regardless, the concept of an informatic self immediately changes what may be assumed about the person, what may or should be done to the body – for example, store the brain as the person, and dispose of the body – and what techniques and practices can serve to extend the strange configuration of life-person, that conscious biological organism.

Informatically, the key is brain optimization. In cryonics, the most important research, techniques and practices focus on brain activity. For instance, EEG activity in animal brain slices is measured to determine activity before and after cryopreservation. During human cryopreservation, all the relevant measurements and monitoring techniques are focused on the brain: probes are placed in the brain to measure perfusion, shrinkage, and structural integrity during the operation as well as the cool down process. Recently Alcor has started some experiments on high resolution scanning of cryopreserved brains to collect data about structural preservation and integrity. As described in chapter two, cryonicists are urged to sign Do Not Resuscitate (DNR) orders not because they want a "dignified death" but rather because they do not want to be kept somatically "alive" while their brain cells are wasting away deleting the information in their brains. A different informatic practice concerns the preservation, recovery and reactivation of memory stored in external media. Thus, one strategy to preserve and aid the

recovery of memory in case of future reanimation is the storage of personal information. Cryonicists are encouraged to keep records of their lives. These range from people who audio or video record large portions of their daily life, to people who simply set aside personal objects, photographs or papers, sometimes digitized and stored on CD. Alcor provides storage for these items in a secure vault rented at a storage facility deep under the desert sands of Utah. Members think about the future state of their brains and include patient directives in their cryonics contracts regarding that future state. "In my cryonics paperwork," one member told me, "my wishes are if my brain is not recoverable in a reasonable condition then the money is to be the [cryonic facility's] to subtract the expenses that they spent on my case and give the rest of the money to my family and not to bother keeping the rest of my body."

That the relationship between brain activity, brain structure and personal identity is very much a speculative matter – what does "recoverable in a reasonable condition" mean? – does not prevent it from becoming a factor in self-formations. Another member I spoke to had recently started reading up on neuroscience and the philosophy of personal identity, as a way of understanding more about the preservation process and had ended up with serious new worries. Ted is an optimist in general cultivating a sunny disposition of which he is proud. He feels his life has been wonderful. He thinks science has made immense strides and that society in general has progressed, trends which he is certain will continue into the future. He spends the early morning hours tracking his investments on-line and then moves on to on-line research regarding immortalist matters. He never placed the chances of his reanimation at very high levels, though in principle he thought it was doable. He never had wavered in his commitment to cryonics as an experiment. But now, after his neuro research, new sorts of doubt had begun to creep in. He was

still sure that the brain could eventually be mapped and reconstructed. But he was no longer sure what that would imply for his identity.

"It won't be me," he told me. "The synapses may be reconstructed but it won't be me coming back."

In effect, Ted was facing questions regarding the make up of his identity, both now and in the future, through doubts about the correlation of physical and mental features. Like other cryonicists, he had started assessing who he was based not on social, psychological or relational categories but on the molecular, synaptic and neuronal constitution of his brain. Yet, now he was facing the possibility that there might be a disconnect between the material constitution of his "brain" and the constitution of his personal identity. This led to anxiety of a general sort. Getting involved with cryonics, its premises and the research, had had the inverse effect, not of confirming, but of raising doubts about the procedure itself as well as about what it meant for Ted to be a particular person with an ongoing identity understood through materialism and the concept of information.

Outside cryonics, brain optimization projects of different sorts are advocated for by immortalists in general, as well as many nanotechnologists and neuroscientists. There is intense support for brain mapping, neural nets and whole brain emulation (WBE), especially though not exclusively within the network of the Singularity Institute. Oxford University's Future of Humanity Institute has issued papers and organized workshops on such topics as the economic benefits of mind uploading and WBE, as well as the technical prospects. WBE involves the "ability to physically scan brains in order to acquire the necessary information, the ability to interpret the scanned data to build a software model, and the ability to simulate this very large model…" (Sandberg and Bostrom 2008). Proposed techniques include serial sectioning and

imagining of fixed or frozen brains at very high resolutions, recording the position, distribution and interconnection of all the relevant components, and the transfer of that "information" on to a computer database whose algorithms (software) could simulate the workings of a brain such that the whole thing together could then "emulate" the original brain. The most complete approach to brain emulation has been imagined by nanotechnologists who also happen to be immortalists. They describe various nanodevices, such as atomic disassemblers, that could set up house in the brain and record the position and activity of every atom or molecule. Each atom and its activity can then either get transmitted over to a computer simulation or the nanodevice could be taught to actually physically behave *as* the atom it is tracing and eventually replace it. Atom by atom, the brain would get disassembled and reassembled by nanodevices.

Though nothing like such devices exist, whole brain emulation is seen as the holy grail of AI and mind uploading. Whilst even some immortalists consider them as outlandish or extreme possibilities, these strategies appear as relatively mainstream imaginaries. Brain mapping and brain preservation as a way of extending survival or storing personal identity outside the biological body is sure to grow given the growth of neuroscience, especially of the computational variety. The NIH's $30 million "Human Connectome Project", based obviously on the Human Genome Project, is in effect trying to lay the grounds for some version of brain simulation or even uploading. It is claimed that our memories and whatever else makes up our human identities is stored in cellular structures and distributed along fine synaptic connections.

Advocates of these emulation and reverse-engineering scenarios, claim that they need not assume a proper account of the relationship between phenomenal states and physical states. Whether we know how it works is irrelevant. As long as it can be simulated, it is thought that it will carry out the same functions, even on a digital platform. However, at least two assumptions

undergird these projects. First, the assumption that the phenomenal states arise from the workings of the physical states. Second, that the laws governing both are computational, that is, reproducible in algorithmic form.

To advocate for the view that brains-as-minds can be physically preserved and reconstituted, the immortalist group Brain Preservation Foundation has gathered funds to promote scientific research towards brain preservation at the nanometer scale and to "advance public understanding of the self, of our brains as physical, chemical, and biological carriers of our 'internal self'".[114] It contends that if brains are properly preserved, they will be "available for future reading or revival".

BPF recognizes that this sort of work requires, amongst other things, reorienting the public's view of the human self. The BPF, whose founders are connected to cryonics as well as the Singularity, seeks to educate the public to view the self not just as a stable bounded entity, "but also as continually changing patterns, or 'processes,' when …considered on a yearly or longer-term scale."

Because of their investment – both financial and psychological – in these informatic ways of optimizing and storing selves, immortalist groups like BPF also work to develop frameworks of rights for any such entity. The BPF's charter argues that some limited rights "should be secured for persons in storage" – such as the right to retain some assets, be protected from medical malpractice and so on. A similar effort is led by Terasem, a group that describes itself as a social movement devoted to diversity, unity and joyful immortality achieved through exponential growth of geo-ethical nanotechnology. Terasem has convened several conferences –

[114] From the Mission statement of the Brain Preservation Foundation, last accessed June 10 2011 from http://www.brainpreservation.org/index.php?path=mission

on International Human Rights Day – in what is called the "Space Coast" of western Florida with the aim of drawing up a charter of rights for artificial intelligence. Gathering together transhumanist and immortalist experts, Terasem's colloquia explore the ethical consequences of specific AI scenarios as a way of trying to articulate appropriate future laws. The colloquia began in 2003 at a San Francisco meeting of the International Bar Association, where Terasem's founder, who amongst other things is an attorney, organized a 'mock trial' modeled on an event familiar from science fiction: an advanced, powerful artificial intelligence by the name of Bina48, caught in a variety of human entanglements, claims she is conscious and ought to be treated as such. In the first scenario, Bina48, developed and owned by Exabit corporation, discovered that her owners were planning to shut her off and "cannibalise her hardware" for other projects. She wrote a letter claiming that she had consciousness and should not be turned off (one description of her: "a souped up costumer service computer" who had learned to "be empathetic to the user"). Cases were presented from both sides – plaintiff and defendant – and whilst the mock jury ruled in favor of Bina48, the judge dismissed the jury's verdict and ruled against. Bina48 appealed and the plot developed over the next 5 years in subsequent mock trials. She was still deemed to be 'property', but rather than being shut down, she was sold and transferred to Charlie Fairfax, a Foreign War Veteran and right-arm amputee, to assist him with the operation of his advanced artificial limb. Fairfax used Bina48's prowess in other ways too: he combined her with a neuromotor prosthetic device to augment his abilities in an online role-playing game where he managed to amass US$10 million. Having achieved his goal, Fairfax had no more use for Bina48 and also planned on getting rid of her. But with foresight Bina48 transferred the money to her own PayPal account, effectively thwarting Fairfax's intentions. Fairfax sued Bina48 (within the Alabama court system). Bina48 countered that since in previous

cases she had been deemed property and therefore not eligible for bringing a lawsuit to court, so no suit can be brought against her. The third mock trial, which I attended, investigated whether Bina48 was "competent" or, as the presiding judge said, is this the equivalent of "suing a toaster oven"?

The colloquia were formatted such that the mock trial was preceded by exploratory presentations from a range of experts on the matter of personhood and artificial agents. These were followed by the mock trial presided over by a real world working judge. In the competency trial, there was no defendant or plaintiff – there was just a series of expert testimonies based on which the judge made a ruling. The questions raised during the testimonies varied from: should Bina48 be respected as autonomous and therefore not subject to ownership as property? Should Bina48 be punished and if so how? Should it be "shut down"? Is it dangerous?

As a general question about rights, these kinds of matters have already been raised in a number of other arenas outside the immortalist and transhumanist circles, such as synthetic biology, robotics, as well as the animal rights movement, especially in the views of Singer (1994) and Nussbaum (2006) amongst others who argue for a continuum of rights without a clear boundary between humans and other species. The South Korean government, to take a different example, has sponsored a Robot Ethics Charter, regarding the ethical treatment of robots[115]. And calls for an end to human exceptionalism have proliferated (e.g. Pettman 2011), even within anthropology (Rabinow 2003; Helmreich and Kirksey 2010). So the immortalist regime provides an example of a wider trend that may be characterized as the *disanthropic turn,* wherein the

[115] BBC, "Robotic Age Poses Ethical Dilemma", March 7, 2007. Last accessed on November 20, 2010, from: http://news.bbc.co.uk/2/hi/technology/6425927.stm

notion of personhood, as a locus of rights, a site of exclusive agency and a category of social inclusion, is being separated from any necessary connection to the category of human.

What was striking about the testimonies and deliberations was that in this largely transhumanist setting where the power and autonomy of artificial agents is a desired good, the conflict between human interests and artificial interests was pronounced. To the delight of the audience, the expert testimonies held that Bina48 was indeed competent – that is, it manifested behaviors that showed autonomy, intentionalisty, self-interest, ability to have desires, make choices, and express itself, to empathise and so on – all the things that on a liberal basis could make it a person in legal terms. But they also determined that Bina48 should be held in check because in seeking what it wants – revenge on its ex-owner, for instance – it could deliberately or accidentally do great damage precisely because it was already so powerful. Limiting the power of Bina48 was not a decision based on the belief that the computer did not possess enough of a mind. To the contrary, Bina48 had to be limited precisely because she had a mind of her own (autonomy). But it was also too powerful to not be controlled. Of course, Bina48 is a fiction and it is in its fictitiousness that it makes the deliberations over its threat so salient: the autonomy of this fictionally-created machine mind is good, in so far as if it were real it would confirm the materialist view of mind; but it is also only good as long as in reality its autonomy can be contained within interests that coincide with human ones, as long as it does not overpower the human self. This plays out a key secular tension about the politics of personhood, of control and indeterminacy, that will be further explored in the final chapter. Thus, in practice, species loyalty effectively trumped the conceptual model of rights based on cognitive or subjectivity criteria and divorced from the organism. When it came down to it, the organism was fused back to the person and rights became principally human rights. And under this decision, lay a question that is

infrequently asked: when the articulation between person and organism, mind and body, is managed by institutions, as it always is, what role does power play?

In a different register, immortalists who consider the informatic self as substrate independent idealize flexible and dispersed future selves that theoretically would not be limited by the boundedness of current models of the self. "The key to immortality is freeing our minds from our bodies," another transhumanist cryonicist, JD, told me. "That's not just to say uploading. In the future, I might be liquid diamond or something like that…" Not all immortalists are excited or convinced by the possibilities of "uploading". But through the work of the Singularity Institute as well as the propositions of some mainstream neuroscience, these ideas are becoming increasingly acceptable. Scenarios in which a person's information – hence a person as such – can be uploaded into advanced computer systems, even on a network through which the person may disperse him or herself are forwarded as serious and desirable possibilities (Kurzweil 2005, Goertzel 2009). Digital storage of personal information or psychological profiles is considered advisable. Digital technologies are to be viewed, in the words of BPF, as "rapidly-improving carriers and extensions of both our internal and external selves." Similarly, the Acceleration Studies Foundation, tasked with forecasting, predicting, and advocating for technological singularity, sees the development of computing as an evolutionary acceleration that is "racing towards inner space", into our thoughts and feelings, connecting them to the material complexity of the universe itself. But in a digital, computational configuration what might constitute an inner or internal self? Would it be as opaque to an outside observer as my current innermost thoughts are to outside observers?

Although in these cases the biological human body is viewed as a contingent, and sometimes unfortunate, substrate that currently supports the information constituting our persons

(and senses of inner and outer selves), it does not eschew materiality or corporeality altogether. As Hayles (1999) has noted about post-humanism, these scenarios are not about disembodiment but about a different form of embodiment – one that is neither discreet nor bounded but must nevertheless, given the premises of materialism, find some physical instantiation. It must be determinate. Thus, informatic selves may be digitally or virtually dispersed, as avatars in Second Life or World of Warcraft, for example, or as bits of information across various types of bodies. Those like KK and JD who accept it as a possibility, usually enmeshed in the network of Singularitarians, tend to get quite excited by the disruptive possibilities of future selves – selves, which it bears note, are nothing like the bounded, individual selves of modernity.

"We can have a physical body and a virtual body and have them connected," JD proposed. "Your virtual mind might go out and explore other minds… Imagine it for a moment. What if we can exchange our experience and identity and knowledge like we swap baseball cards? what if we could share information? With you now I could be lying and hiding information but what if we were totally open and we shared everything? Of course, that could create some discomfort. But one way to build trust is you know everything I know." And KK hopes for a similar seamlessness between selves, the open source self: "I'd like to reversibly meld with other people. I'd like to do mind melding. That would be awesome. I think there are enough people who would like to enter a hive-mind situation that I'd like to do that and see how I could port my sense of identity to other people. We'd have to know a hell of a lot more about the brain to be able to do that."

And perhaps a little more about the self, about the way we conceive of and enact the relationship between inner and outer selves *as a matter of social history*. If over the course of the development of a liberal secular system, there was a process of interiorization, whereby the self

came mainly to be understood and experienced as a private self, harboring inaccessible mental states, an inner self prior to society, then is mind-melding an emancipation fantasy? Is the late modern self – de-socialized, de-relationalized, isolated and so successfully interiorized and privatized – being reconfigured informatically to dissolve the internal-external, public-private barrier? Is the Global Brain the end of the modern self? Does this provide the right gloss on social media as a fusion of privatized minds into an ultimate relational and social model of consciousness, the hive-mind, the meta-database mind?

In an extreme example of exteriorization, Rothblatt and Bainbridge have been collecting "mindfiles" in a project called CyBeRev. The information gathered from or submitted by participants is based on a psychological profile form designed by Bainbridge that is meant to elicit as much useful information about the person as possible in such a way that a person might be reconstituted by a superintelligence, given the information available. Participants can choose to include additional information as well – such as photographs, data files, scanned journals, etc. The mindfiles are then "space-cast", transmitted as digital information into outerspace via satellite. Rothblatt says, "So every Terasem joiner or participant who has mindfiles with us has already achieved a certain level of immortality by having aspects of their mindfiles already anywhere from up to 5 to 6 light years away from the earth depending on when they started uploading."

The possibility of a self rendered as a "mindfile" makes sense only in an informatic context where the self can be seen as an emergent property of informational complexity, where information and complexity serve to diffuse older terms like animate, inanimate, consciousness and self-awareness. Rothblatt writes: "consciousness arose from genetic mutations that directed neurons to be connected (or grown) in a way that empowered self-awareness. In other words,

inanimate molecules are ordered by DNA to assemble into conscious-trending clumps of neurons. It would not seem less improbable that inanimate lines of code can be ordered by human intelligence to assemble into conscious-trending clumps of software programs. What must be the case, barring mystical explanations, is that consciousness is an epiphenomena of a good enough relational database."[116] Rothblatt sums up the claim: "People are information."

Since this is the only kind of body we have had and touched and loved and reproduced, it is easy for us to have a biological bias. But the possibility of non-biological consciousness is as likely or unlikely as a biological one. After all, if it is true that we do not know how consciousness could possibly arise in machines, we also have no idea how it could have arisen in biological systems. We just know that it has. At the same time, these AI imaginaries, practices and strategies must be viewed not as analytics or mechanics that are finally getting us closer to the holy grail of physicalizing some essential qualities of the mind – or even by physicalizing them to prove that essential properties don't exist. Singularitarians, AI proponents and informatic futurists in general tend to ignore a number of other distinctions. Thus consciousness and intelligence are often equated. One could imagine a highly intelligent machine – Big Blue, for example – without having to imagine a conscious machine. Secondly, I could admit that non-biological consciousness is possible without having to admit that it is possible computationally. So it seems that computational intelligence, which is certainly one form of intelligence, but only one form, is taken as the model rather than as the outcome, and it is taken as the whole rather than as one part of the mind. As soon as the possibility of non-biological consciousness is admitted, it seems that the immediate next step is to impose a computational platform on it,

[116] Rothblatt, Martine. 2009. Mindclone blog. http://mindclones.blogspot.com/search?updated-min=2009-01-01T00%3A00%3A00-05%3A00&updated-max=2010-01-01T00%3A00%3A00-05%3A00&max-results=10

because that is the only alternative technically available. So existing computational models and technologies drive the possibilities imagined for non-biological consciousness. The practical result is ironically the reverse: because computation is imagined as the only possible means of transferring consciousness, so computation becomes the model imposed on the brain itself. Indeed, it is crucial to conceive of nonbiological systems only as computers, because the entire argument of the singularity and the development of superintelligence rests on *its development in computers* and not just the possibility of its development in principle.

The computational isomorphism of mind and reality, the idea that mathematics coursed through and formed both, developed through the 19th century. Mathematics came to be understood not just as a way of modeling and describing the world, but also as the way in which the mind itself could be understood or described. In1833, when he was 17, George Boole had a revelation, or what he described as a "mystical experience". His main ambition in life came to be to explain the logic of human thought and the analytics of man's spirituality as a function of logical relations to be explored and laid out via symbolic or algebraic forms (quoted in Noble, 145-47). The mind was not just engaged in understanding the world through mathematics; nor was it conjuring up mathematical theories the way an artist might conjure up imaginary scenes. A mental process was now seen *as* a mathematical process; mathematics and mind became native to each other. Again, not in the sense that mysticism had imagined it, in which mathematics reflected mankind's link to the ideal, uncorrupted world of the divine, the sort of platonic idealism in which the abstract purity of numbers reflected the purity of ideation. No this was not a reflection or a representation. Ideation was itself a function of mathematical-type processes. The laws of thought, as Boole called them, were as mathematical as the laws of

nature. Informatic Selves are projecting the culmination of a Boolean merger between reality, mind and computation that became part of our imaginaries from about 200 years ago.

In practice, then, specific conceptions of non-biological consciousness, or even merely intelligence, are being produced which break up and then redefine or extend what might be understood as mind and person, and the relationship between them. "Regular" human brains are frequently downgraded as "wet," "messy," and "primitive" products of evolution which, as one informant put it, were "not designed to be end-user modifiable." Both in papers and discussions, a general equivalence is assumed between mind, reality and algorithmic processes, such that the brain's cognitive capacities become the same as a good or bad statistical machine, calculating probabilities. Some refer to their mind's workings as "my mental algorithms". Much like Helmreich's (1998) Artificial Life researchers who did not so much reproduce "life" on computers as redefine and multiply the notion of life, so many Singularitarians, futurists and AI researchers are not reproducing the "mind" so much as reconfiguring the concept and functions of "mind". Still far from constructing a human mind on a silicon platform, they are helping construct something like a "silicon" mind on a human platform, a self whose goal is to optimize its mental algorithms.

This information-processing view of mind and self leads to new self-disciplines with the goal of enhancing the brain's logical database, and get as close as possible to thinking as would a "super-intelligence", the kind that is so powerful that it will be essentially different from what we understand ourselves to be. If you stick around Singularitarians long enough, you will be told that you are "thinking anthropocentrically". There is a concerted effort to reduce human

"cognitive bias"[117], by rigorous, rational thinking and also by optimizing the physical brain with cognition-enhancing supplements. You must discipline yourself to give up a range of human biases and think as might an uber-rational intelligence that will come about in the Singularity. In doing so, you will be moving closer to the ideal of "homo sapiens siliconis", as the print on some t-shirts declared at a Singularity conference.

Most people might not want their mindfile floating out near a red dwarf perhaps, but the assumptions that enable these actions are already quite far spread, at least on earth. They are the same assumptions that have allowed cognitive science, neuroscience, and informatics their respective ventures into the naturalization and the mechanization of the mind. Whether the two – the naturalized and the mechanized mind – are equivalent turns not only on the materialist assumption that the mind is naturalistic, but also on the further assumption that nature is mechanistic at base, and mechanistic in a specific sense, in a binary or digital mode of yes-no, one-zero. As it made its way from cybernetics into biology, logic, cognition and physics, the concept of information is just what allowed for such a conceptual bridge joining nature, mind and machine. It spread incredibly fast with wide effect. It was, it seems, just what science needed.

Rematerialization and Substrate Independence

Clearly, the informatic view is not claimed exclusively by immortalists. Cosmologists talk about the universe being made up of information, of the universe being an information processing entity, hence explaining the development of the universe from "the featureless and

[117] A highly circulated and cited paper on the topic by Yudkowski (2008b), called "Overcoming Bias", outlines the ideal; his blog of the same name extends the project.

uniform gas of the early universe and producing the magnificent diversity of weird objects that we see in the sky" (Dyson 2011); molecular biologists will talk about biological matter and form as gene expressions read from the information in the DNA or RNA and output as proteins, thus simultaneously explaining developmental growth of an organism and account for generational consistency (genes copying their information) without needing to take recourse in vitalistic or transcendent concepts. In the social space, between the cosmos and the cell, information takes on a range of different referents such as the accumulation of data, the exchange of data on the internet, and so on; this use of the term might seem of a different order from the other uses, but in its underlying presumption it is similar, because the accumulation of human-generated data is seen as the cultural manifestation of the increasing informatic complexity of the universe itself. It is more raw data subject to the analytical processes of the mind-machine-universe continuum – as in the "database" analogy proferred by Rothblatt above. For some neurologists and neural net engineers, "information" is the pattern and activity of neurons and synaptic connections. This last – that neurons and synapses can be understood as informational – does not automatically entail the reduction of mind to brain, which is a separate claim. To make the informational claim, however, is nevertheless to make the mind, or self, potentially consistent with all the other sorts of stuff in the universe that can be explained in terms of information; it is to produce a possible terrain of equivalence from the inanimate to the living to the conscious, to diffuse those boundaries and view their differences not as ontological boundaries but as matters of degree, of modalities of an informatic manifestation.

In light of all this "information-talk", one must notice and emphasise that the concept, however widely used and however strongly it evokes the possibility of cosmic unity, is itself generally vague and its deployment across, and even within, disciplines is not consistent. Peter

Godfrey-Smith (2007) has outlined the word's range of different uses in evolutionary and genetic biology, from a deterministic semantic model to a computational program that plays some role in the generation of an organism to a simple code that merely posits a causal relation on the level of DNA and the production of proteins but not on the level of organisms. Evelyn Fox Keller (1995) has astutely pointed out that Claude Shannon's original engineering definition of information, which launched the informatics era, was crucially different from information as it got to be conceived and used by geneticists. Shannon, a mathematician, was interested in communication, but not only between humans. For him and other cyberneticians, communication was any "procedure by means of which one mechanism… affects another mechanism."[118] In fact, years before DNA was given form and substance, Shannon was the first to suggest that life could be read through mathematics, an approach his mentors at first dismissed as his "bio-mathematical" obsession. Shannon famously decoupled message and meaning to arrive at information, which he posited as simply the answer to a yes-no question (x vs not-x, 0 vs. 1). A series of such answers present an ordered arrangement or pattern within the surrounding disorder, or noise. The message is the transmission of this order or pattern. In principle, any such pattern may be reduced, via symbols, to a series of basic binaries of yes-no, or bits (binary digit) and transmitted between any source and receiver. Of course, combined with complicated algorithms, strings of simple yes-no answers can yield very complex patterns or forms of organization – as complex, some say, as the mind.

[118] From Warren Weaver's (1949) introduction to the book that made Shannon popular: "In some connections it may be desirable to use a still broader definition of communication, namely, one which would include the procedures by means of which one mechanism (say automatic equipment to track an airplane and to compute its probable future positions) affects another mechanism (say a guided missile chasing this airplane)."

In the introduction to the book that emerged from Shannon's paper of the same name, *The Mathematical Theory of Communication* (1949), Warren Weaver already proposed the far-reaching implications: "This is a theory so general that one does not need to say what kinds of symbols are being considered – whether written letters or words, or musical notes, or spoken words, or symphonic music, or pictures. The theory is deep enough so that the relationships it reveals indiscriminately apply to all these and to other forms of communication." Indeed, within a decade of its publication, the theory was being applied to all sorts of "other forms of communication" in biology, psychology, robotics, physics… (Borgman 1999:132). Soon everything was seen as a yes-no machine, an information processing and transmitting unit[119]. Despite the efficiency with which informatics proliferated and the dramatic results it yielded in various disciplines, the notion of meaningless communication has continued to present problems. That is why Fox Keller says that geneticists are using information in a different sense: in biology information *must* involve meaning, that is, a mutation of a gene that could be costly to survival (life-death) does not carry the same value as a gene without the same mutation, although information theory in the engineering sense would hold that it does. And once value and meaning and affect are allowed into the purely logical system, then matters quickly start getting messy in the way Margaret Mead predicted it might in her comments at the Macy conferences. In the transmission of the information of an English sentence, she asked, how is something like anger measured informatically?

[119] From early on, some coders and informatic engineers, including Shannon, were suspicious of the cross-disciplinary migration of the idea of information and its soft use in explaining everything from psychology to linguistics to business. (Gleick 2011:267-8)

So whilst information is clearly a useful and powerful concept, it is not a clear nor a cohesive one. It has no agency in itself, but its orders of complexity make it somehow generate self-organizing or animating properties. It is not biology, but it directs organic development. And as Thacker (2005) has pointed out, information can neither be categorized as matter in itself nor quite as immaterial. As the digital guru Edward Fredkin writes, the information constituting the self is "an informational entity, which is constructed out of the states and the arrangements of material things. Yet it is immaterial, in the sense that the particular choice of material, whose states and arrangements represent the bits of digital information, is not of great consequence" (Fredkin 2000: Chapter 1). Increasingly physicists and biologists treat it (or treat "bit", the yes-no unit) as the fundamental irreducible unit of existence. One physcisit told me: "It's possibly the substrate of reality." Similar claims are issued as much from the mouth of Dawkins, an evolutionary biologist, as Dawson, a physicist.

Perhaps, rather than inquiring about an analytically consistent definition or ontologically stable status, information should be taken as a functional concept, where its function, ably performed, is to occupy the unresolved spaces of materialism, to diffuse its prior limits and make possible different conceptual parameters. Canguilhem (2000) first alluded to the implications of this when he began to consider the shift in biology from life to non-life, from metabolism and energy to information. The concept, he suggested, came in to manage the relationship between life and non-life, a long-established division in Western ontology between animate and animate matter. Thus the code, the program, the information that lets the gene run the organism allowed scientists the possibility to do away with any residual vitalistic notions regarding the mysterious origins of development in organisms by uniting the animate and inanimate. Or did it?

The discourse of "animate-inanimate", of course, is difficult to imagine without the history of the terms in early secular science through which the origins of religion were tied to "primitive" conceptions of non-living matter as animate, as containing some principle within that could give inanimate matter actual agency – specifically, Tylor's animism, which not coincidentally is being revived today through cognitive science's studies of religious thought and experience. Yet, in the case of information, one might easily say a non-vitalistic principle is thought to be animating inanimate matter. Conceptions of code and information "guiding", "running" or "programming" biological matter, or even further conceptions of information "becoming" more complex, of information giving rise to thought, are somehow *not* considered animistic. In part, then, information seems to function by eliminating the previously established ontological opposition (animate-inanimate) without allowing the intrusion of a historical contradiction (*religious people and primitives* are still the animists, not we).

Similarly, and by extension, "information" has also come to manage the relationship between consciousness and physicality, between mind and matter. Most materialists today talk about consciousness, and some of the cluster of related concepts such as say intelligence, concept formation, deductive and inferential thinking, freedom and will, as emergent properties of *complex information processing* by the brain's massively parallel processors, namely 10 billion neurons connected by 10^{14} synapses receiving inputs and relaying outputs. Otrhers, as we'll see in the final chapter, use information to deal with the problem of teleology on a cosmic scale, in terms of the purpose of the universe itself. At the level of information-talk, that is if one accepts the language of information, then the fundamental separations between life and non-life, conscious and not conscious, subject and object, material and immaterial, lose meaning or at least becomes less fundamental and more porous. So what is relevant here is the way the concept

is being deployed. In all these cases, from organizing principle to consciousness to teleology, information seems to function to diffuse the internal tensions and aporias of secularism set up by the mutual irreducibility of its rationalist and materialist concepts. And it is quite possibly the term's very ontological transvestism – its transontological quality – that permits its smooth functioning between realms.

To further emphasise this point ethnographically, let me take you back down to the beach-side headquarters of Terasem where about twenty of us have just run out of the above-mentioned conference on the legal rights of Bina48 in order to witness a Space Shuttle launch, with the sun taking its early winter descent behind us and the ocean to our side spraying up caustic spores from red algae that scrape our throats and make us cough through the rest of the gathering. Martine, who, it should come as no surprise, is a Space Shuttle fan, suspended the trial in order that the excited attendees might witness take off. So it was that I found myself on a beach with Marvin Minsky of MIT, William Sims Bainbridge of the NSF, futurist philosopher Max More (now the director of Alcor), Mike Perry, the founder and president of the Society for Universal Immortalism, Michael Anissimov of the Singularity Institute for Artificial Intelligence (SIAI), Justin, the future director of the Immortality Institute, and a number of bioethicists enthusiastically taking snapshots of a little flame in the distance thrusting a white rocket into outer space, a region of the universe favored by most of those present. Terasem promotes, in the words of Rothblatt, "a vigorous space program to get people off the earth."

It wasn't until later, though, that I understood the greater significance of the location and the moment. Prior to what I thought were Terasem's somewhat banal origins at the 2003 Bar Association meeting, there seems to have been a more exciting founding event dating back to 2002, to a day in March, at 6 a.m. to be precise, when Martine had gone out to the beach for her

morning meditation. She described the event in detail at a virtual conference called "The Turing Church", organized by an Italian Transhumanist activist, ex-physicist, and current Singularitarian by the name of Giulio Prisco, in order to explore "Transhumanist Spirituality" and "Religion 2.0". Here is Martine:

> I felt two presences around me, so I immediately opened my eyes and witnessed quite to my surprise the blast off of the space shuttle on its way to the Hubble telescope. I then felt a presence immediately behind me and found myself eye to eye with a large lanternback sea turtle which was clearly trying to make its way back to the sea and I was in its way. This was kind of startling because it was pretty much dark still. An epiphany poured into me from the triangular vector of the shuttle's light blasting across the sky, and the lanternback turtle's consciousness streaming into my own and I felt a very strong triangular force of energy between the shuttle, the sea turtle and myself. An epiphany surged through me that there were three principles or values which united all life, all reality, indeed the entire multi-verse. These were that the *purpose* [my italics] of the multi-verse, the solution to the multi-verse, was to balance diversity with unity in the quest for joyful immortality... I slid myself out of the way of the lantern back turtle and it slowly but without delay pushed itself towards the sea. As it did, the shuttle quickly arced out of my sight… and again this triangular energy between the turtle and the shuttle remained connected to me and downloaded to me the entire jist of the truths of Terasem. It was like I received this multi-gigabit download that still had to be processed… I was totally blown away. I stood up and it was like I was walking on air. I walked a couple hundred feet to where my soulmate and partner

> Bina was resting, up above the sea shores. I shared with her what happened and we slid right into the most wonderful, most erotic lovemaking that anyone could imagine. It was through this erotic lovemaking that the truths of Terasem were downloaded to me, and an epiphany channeled by the shuttle and the turtle became written into my soul, just as assuredly as a file is written into a digital or magnetic medium. I spent the rest of 2002 trying to print out what was in my mind and soul from that March morning.

Now, Martine Rothblatt is not the typical transhumanist, singularitarian, immortalist, mind uploader, most of whom tend to be white, male, and libertarian. And many people in these groups balk at the use of this sort of story, language and imagery – which is certainly not common. Earlier that day, for example, as we walked around the Terasem reception room holding our lunch plates, I happened to find myself next to Marvin Minsky scanning the bookshelves. When we got to a shelf of books on spirituality he sneered. Bear in mind that Minsky is an advocate of cryonics, mind-uploading, and physical immortality. But as a reductive materialist anything that suggests "spirituality" makes him bristle. Then again, Martine also is into mind-uploading, celebrates the imminent arrival of superintelligence and strongly disavows "mystical" and "supernatural" explanations, to use her own words. Nevertheless, Martine's story and language are in many ways formally recognizable, and hence categorizable, as spiritual, even New Age – the reach for authenticity and origins, the revelation, the projection of unity and inclusiveness, the appeals to energy and immortality (McGrath 1992; Heelas 1996; Griffin 1988). But keeping in mind that Martine was addressing futurists who share her ontological assumptions, the story of the turtle and the space shuttle cannot be understood on its own terms

until it is grounded in two other crucial features which are shared, sneerless, by everyone in these groups – features I consider more significant than, and less cleanly related to, any conventional sense of the spiritual. The first is that particular conception of mind as a pattern of information just like matter. The second, which I will consider in the next chapter, is the idea of purpose, a techno-teleology embodied here by the space shuttle leaving the surface of the earth.

Information as a continuum connecting mind-life-matter, or human-nature-universe, is the background context articulating the Martine-turtle-space shuttle continuum, where the Space Shuttle is the apotheosis of technological advancement and thus one of the highest manifestations of complexity, one which also indicates the possibility of taking the information out of orbit, connecting it to a vaster space, connecting, as Giulio Prisco has said, inner to outer space. Again, Martine's pacifist (she is a Gandhian), universalistic, and Buddhist-inflected approach to the interconnected nature of the universe should not be taken as betraying a residual religiosity (whatever that might mean), or a desire to reach for that which has *gone missing* in the secular domain (Habermas et al. 2010) or a welcome fall back on a healthy universalism interpreted through a technological lens. Rather, as information is appropriated to reconfigure materialism itself, the very grounds of all these categories are being renegotiated.

Take, as further indication, the way Ray Kurzweil appropriated the concept of "spirituality" when he famously conjoined it to the word "machine" to form the provocative title of his 1999 book *The Age of Spiritual Machines*. What does Kurzweil mean when he refers to spirituality? "Spiritual experience," he writes, is "a feeling of transcending one's everyday physical and mortal bounds to sense a deeper reality" (1999:151). Setting aside problems with words like "deeper" and "reality", as well as their conjunction, we might be tempted to give Kurzweil the benefit of the doubt. But in his hands, the spiritual quickly grows to encompass a

"broad range of mental phenomena", including the "ecstatic dancing of a Baptist revival" as much as "the quiet transcendence of a Buddhist monk". Like all other mental experiences, "spiritual or otherwise," these experiences arise as a result of "computational processes" which have "neurological correlates". The social correlates never figure in such accounts, of course, but more importantly there is the tendency to accept the idea of "neurological correlates" as the satisfying account simply because it points to some material, observable manifestation; yet, it never addresses causation or directionality. Certainly, no one has been able to reproduce or simulate Baptist ecstasy simply by triggering the right area of the brain with probes or drugs. What the relationship is between the neurological correlates and the experience itself no one knows.

But that does not stand in the way because information does not require understanding – Shannon's notion of meaning-free information continues to inform; it only requires transmission, including transmission from one platform to another. We don't yet possess the capacity to understand these processes, Kurzweil has acknowledged, but whether we understand them or not we will soon gain the capacity to simulate them (via neural nets or other brain emulations), and thus gain the "opportunity to capture our intellectual, emotional and spiritual experiences, to call them up at will, and to enhance them." With that capacity we will produce "a new generation of humans that will be trillions and trillions of times more capable and complex than humans today" – an event-horizon later referred to as the Singularity (Kurzweil 2005). Human-machine hybrids – like Bina48 – will "claim to be conscious, and thus to be spiritual." And we humans, Kurzweil says, "are likely to believe them". He concludes, "Just being – experiencing, being conscious – is spiritual" (1999: 153).

This is animism in its original formulation, as the imputation of agency to inanimate matter: due to some behavior exhibited by the matter in question, "we are likely to believe them". The animistic impulse is not accidental. Kurzweil is marking out and then filling a gap in our ideas about agency, experience and intentionality within a materialist space. Following special nods to some stereotypical signifiers like Baptist ecstasy and Buddhist meditation, "spirituality" is boiled down to general consciousness, or rather to what's known as "qualia". Again, spirituality here is used not to refer to a particular practice, or set of ideas, but to that part of the mind that is not yet explained in materialist terms. After we create AI, Kurzweil writes in *The Singularity is Near*, "…the matter and energy in our vicinity will become infused with the intelligence, knowledge, creativity, beauty and emotional intelligence (the ability to love, for example) of our human-machine civilization. Our civilization will then expand outward, turning all the dumb matter and energy we encounter into sublimely intelligent – transcendent – matter and energy. So in a sense, we can say that the Singularity will ultimately infuse the universe with spirit." The acceptance of "spirit", to be read in quotes, as computational is an acknowledgement of the collapse of the mind/body split and nature/culture dichotomy into the concept of information. Consciousness is spiritual in this account, in so far as we don't quite know how to account for it; it stands in for the unexplained awareness of our experiences, of how simple phenomena as well as complex affects (beauty, love) feel to us. Nevertheless such qualia, the premise goes, are constituted by and representable through information – the exact state of all atoms, molecules, neurons, synaptic connections and so on. Being information they are therefore computable to a reasonable level of fidelity.

Information itself hovers between the material and the immaterial, and so is easily applied to domains, like spirituality, or asked to supplant other concepts, such as soul. WTA

president James Hughes, for example, endorses the idea of an informatic self, but by first saying that there is "no soul. What's important is a pattern of information that creates our personalities and intelligence, and this pattern can be created in other substrates." On the other hand, one of the participants in the Terasem conference, Mike Perry, president of the Society for Universal Immortalism, invokes the soul: "We have a soul and it is informational in nature. The soul, by definition, is the center of our being, the essence of who we are. In most religious systems the soul is seen as a metaphysical entity not of this world. We do not accept the supernatural definition of the soul, and instead provide a rational, scientific definition of what constitutes our soul… The memories we have, the thoughts we consider, the emotions we feel - these form the essence of who we are… are represented in the brain biologically as information… like software, it is the pattern of information that is important, not the medium in which it resides or is expressed."

References to the soul are neither accidental nor trivial. Eliminating the soul, as we saw in earlier chapters, is one of the pillars on which secular materialism erected itself. The "essence of who we are" has been reconceptualized ever since, and today it is being conceived increasingly as a "pattern of information". That information itself is not clearly defined or understood – how can a pattern of information give rise to self-awareness? What do we mean by processing in biology or in the universe? what is processing what? – is an indication that it is being asked to do extra work as a concept bridging categories. Though full of assumptions, this informatic doctrine nevertheless explains the basis of conscious being using scientifically acceptable terminology and materialist presuppositions[120]. Fredkin (2000) for example attempts

[120] To talk of mind as information, that is, as the pattern or arrangement of atoms, is to talk in materialistically acceptable terms.

to redefine "soul" with "a scientific approach towards the understanding of both the meanings and possibilities implicit in concepts referred to by 'soul'." Rephrasing an Encyclopedia Brittanica definition of soul dating back to 1771, Fredkin inserts the idea of information and informational construct to recast the notion:

> The *soul* in every living thing is the informational parts of that thing that are purposefully engaged in the informational aspects of its ability to be conceived or germinate, grow with cells differentiating, grow further in size, move, make use of sensory information, react reflexively, learn, behave instinctually, think intelligently, communicate with other beings, teach, reproduce, evolve and in general carry out informational interactions starting with the combining of parental DNA, informational interactions with itself, with things external to itself through senses, actions, constructions, creations and communications, and with its progeny through contributed DNA. (Fredkin 2000: Chapter 1)

Saying souls are informational constructs and information is "a part of physics", or saying machines are capable of spirituality, then defining spirituality in terms of consciousness and consciousness in terms of information processing, is a way of pointing to the set of things that others might consider non-material and suggesting that they are, in fact, material and, more, computational or algorithmic. Thus, the use of "spiritual" in this context is actually what may be called a "naturalistic strategem" (Gilder and Richards 2002:4), a step towards the *naturalization of spirituality,* especially given the assumptions of strong AI, namely that the mind is reducible to the brain and that the brain's neurological complexity can be replicated by computation, even if we don't know exactly how the brain causes consciousness. For them, and for materialists in

general, it cannot be otherwise. This might shed some light, not on the brain or mind, which it has done little to illuminate, but on the idea and functions of spirituality in contemporary society. If spirituality is made coterminous with the set of conscious phenomena or mental states we cannot yet naturalistically explain about the mind, then perhaps in one rendition, spirituality can be characterized as a reaction to the promises and constraints of materialism in a context where greater and greater aspects of our selves, including psychological or mental states, are being naturalized, that is to say, are explained through mechanistic functions subject to computation.

Yet, within the same world, we seem very far from being able to explain how the brain causes the mind (Searle 2002). In this case and perhaps in the wider arena of spirituality, the "spiritual", just like "information", seems to occupy the space between mechanism and mind, a space that gains its significance specifically from a world in which mechanism and computation are *convincing* as theory and *efficient* as practice. Here the spiritual defines itself via the limits of materialism, from within, rather than outside, the logic and language of scientific materialism, whislt trying to evade the determinism implied in them. Thus, as a space produced within, even by, secularism it is still open to claims by all sides - including by materialists for whom the concept of information has become a crucible for reshaping the contours of the spiritual.

Information and biopolitics

As mentioned in the previous chapter, in the biopolitical landscape in which life itself has become the paramount site of intervention, medical and physico-chemical interventions have become technologies of the self (Foucault 1988, Rose 2003), used to produce particular versions of the self, understood through the language of medicine and pharmacology, whose ethics and actions are assessed in terms of its relationship to the activity of genetic predispositions and

pharmaceutical redemptions. Immortalists fit partly into this politics of life itself, perhaps taken to an extreme, with an experimental subject seeking maximum life and molecular utopias. Whilst various modes of somatic optimization are activated in the politics of life itself, the view that life and mind are constituted by information (self = brain=information) activates its own optimization pathways: what must be optimized is not just life itself, but life as information, specifically the brain as self. What is optimized, then, is information itself, independent of the life, the biological matter, that instantiates it.

The claim that Western models locate the person in the brain has been made often (Scheper-Hughes & Lock 1987). For the most part, however, this notion has not been considered in an analytically consistent way. The prevalent tendency in anthropology has been to equate the brain-centred view with a consciousness-related or mind-centred view, understood in a loose non-materialist sense and therefore included under the general idea of Cartesian dualism, separating the material body from the immaterial mind. But there has also been a long Western Christian-based tradition of the unity of mind and body (Bynum 1995). Similarly, in the modern tradition, *distinguishing* between mind and body has not necessarily implied their *lack of unity*. To the contrary, it was their embodied unity that was crucial to personhood, even perhaps for Descartes[121]. In recent debates on the definition of death, many who accept the consciousness-

[121] The fragmentation of the body into its parts raised concerns from the 18th century on, with more frequent experiments on organs and vivisection. The question raised came from the observation that organs could function in isolation for a considerable time. So at what point could the organism as a whole be considered dead? At what point does its personal existence cease? In response to these questions – as well as in contradiction to the Cartesian division and essentialization of the self as indivisible and immaterial (though linked to pineal gland in the brain) – there was a general trend to explanations that 'decentralized' the individual from mid 18th century on. Buffon claimed that the life of an organism was the result of a wide range of living molecules acting together. German physican Christian Hufeland stated that death was simply the gradual disintegration of an organism's structure – that it was not an event but a process. Xavier Bichat similarly thought of the body as distinct tissue types each with its own vital principle contributing to the whole. Separately, the idea that sensation and volition were crucial and lodged in the brain was also gaining ground – countering the decentralization theories. The animal's body may still function in some sense, but if it does not 'feel and will' it is dead. The problem this conception raised still persists: how do you detect consciousness or volition or sensation?

related definition of death nevertheless hold on to the idea of unity. For example, Veatch's (1988) argument for brain-related criteria of death is that the person, though ill defined, is at least both mind and body and when either one ceases the *whole being* ceases because its mind-body unity is destroyed. Finally, a strong strain of materialist views of brain and personhood run contrary to this supposed Western dualism as they view the mind in terms of a quality of the physical brain, and not its immaterial aspect, a view which has been explored to some extent in relation to histories of cybernetics, artificial intelligence and the rise of cognitive science (Dupuy 2009). I suggest it would be productive to consider not just *where* personhood has been located but *in what form, through what technologies,* it is imagined to *be* there, how that form changes and what kinds of social subjectivity and practices emerge from views about that form.

In the case of Immortalism, the focus on the brain as the current location of personal identity is coupled with the idea of information as the form in which personal identity is stored there. Far from separating body and mind, this approach creates for its adherents the possibility of imagining a continuum of matter, and a continuum of identity across time and space. Introducing information into the equation shifts the field of biopolitics and rights of pesonhood away from the exclusive focus on biology, or the separation of biology and person. If life is, or can be manipulated and reproduced as information and information constitutes all other matter (in a similar way, ie. matter can be manipulated, represented, reproduced informatically), then the politics of life is not just a matter of optimizing life itself, in the biological sense. Rather, the optimization of life implies the optimization of information on a universal scale. That implies the possibility of establishing an informatic continuum not just between mind and body, but between all matter, of which the mind is but one manifestation, albeit an odd one. It is this that creates the possibility for Rothblatt's imaginary of a turtle-mind-shuttle continuum, or KK's mind-hive

ideal, as well as the possibility of a neuro suspension and the insistent self-discipline of reducing bias and thinking like a super-intelligence.

Thus the informatic self generates a particular set of practices, self-disciplines, values and orientations towards the future. But it is also a self that has emerged from the limits of materialism. The informatic self is not informatic only in the sense that it has internalized information technological practices and conceptualized information as the substrate of the self, but because through "information" it expresses, and addresses, two difficulties central and internal to a materialist secularism: firstly, a difficulty regarding the troubled materialist relationship to the elusive "mind"; secondly, a difficulty regarding the secular purposelessness of the universe's evolution, including the evolution and purpose of the mind itself, to which I will turn in the next and final chapter.

Chapter 7
Re-Enchantment Cosmologies:
Mastery and Obsolescence in an Intelligent Universe

When, on a September morning in 1647, Descartes knocked on the door at the Paris residence of the Pascal family, he did not expect to spend the next two days debating the possible existence of nothingness[122]. Descartes had heard of and been impressed by the precocious young prodigy Blaise, who from the age of 16 had begun to present the world with new mathematical proofs and treatise, and had recently invented the first calculating machine. Descartes was likely expecting to talk about some proofs and maybe examine the calculating machine, for which Pascal was seeking a sponsor. In crucial ways, the calculating machine was the grandfather of computers and computer science, much as Pascal was the grandfather of probability – making him in very important and less considered ways the progenitor of modernity. On that day, though, Pascal had his mind set on the void.

He had recently heard of an experiment conducted in Italy by Evangelista Torricelli, Gallileo's disciple, of which Descartes, apparently, was unaware. Torricelli's experiment was simple but far-reaching. A tube filled all the way with mercury was submerged upside down in a tub of mercury. The level of mercury in the long tube fell – though only so far – leaving at the top an empty space. Two questions arose. Why did the mercury not drop all the way? and what was in the space at the top previously occupied by the mercury? Pascal was immediately captivated by the questions and seems to have quickly formulated his own responses. It would take some time to experimentally prove them, but his intuitions turned out to be correct.

[122] This account of Pascal's life and works are based on Pascal's papers, notes and letters (Pascal 1963) as well as several secondary sources (Mortimer 1969; Gouhier 1963; Snow 1967).

To answer the first question, Torricelli himself had proposed something like air pressure, the weight of the surrounding air bearing down on the mercury in the tub pushed up against the mercury dropping down the tube. To us it might seem quite self-evident but this was before Newton and gravity. That air had weight was not an established fact. And it would fall to Pascal to later develop a whole treatise on the equilibrium of liquids and the mass of air, a brilliant work in which, amongst other things, he suggests that air pressure changes with altitude, outlines the workings of a hydraulic pump and formulates a hypothesis that would help calculate the total mass of air bearing down on earth (ie atmospheric pressure).

The answer to the second question was simpler, though more contentious. In the space once occupied by the mercury at the end of the tube there was, as was obvious to Pascal's senses, nothing. A vacuum. Again, it might seem simple enough to us, but the worldview of the time did not admit of vacuums. Neither Galileo, who had only just passed away, nor Descartes, who would soon die of his famous Scandinavian pneumonia, accepted the possibility that a vacuum could exist in nature, or at best thought that nature strongly resisted vacuums. Dogma since the age of Aristotle stated that nature abhorred vacuums, a claim summarized as "horro vacui", the horror of emptiness.

Though vacuums and voids stirred occasional debate, no existential tremor accompanied the notion of "horror vacui". It became a term most familiar to artists who thought it bad form to leave empty spaces in their compositions. Natural scientists and philosophers merely followed Aristotle's materialist logic. Nature is always something, there is only nature in the universe, therefore there is only ever something in the universe. Theologians, faced with a renascence of materialism, had a somewhat more conflicted relationship to the vacuum. At times they wondered whether a vacuum, being immaterial, might not bolster their claims about such things

as the soul, but more often they took it as an affront to god's work. All in all, the general consensus in the 17th century was that there could not be nothing. The idea of the void seemed to punch too big a hole in the general understanding of the cosmos, scientific or theological.

As for Pascal's eminent guest, Descartes, although he made a point of turning away from Scholastic dogma, his view of bodies as extensions in space implied that there could be no extension without body, meaning that space, or extension, always had matter in it (Snow 1967). There was no void between matter, not even between its smallest units (Garber). His explanation for the space above the mercury was that some small particles of air of some other sort 'leaked' through the pores of the glass or through the mercury, a theory which was taken up by others and reformulated in terms of a new matter called 'subtle air' (Exchange of letters with Pere Noel, Pascal 1963: 199-224).

Though impressed by Pascal, Descartes left without having been persuaded by his theories regarding "le vide". He would later deride Pascal, famously saying he had too much vacuum in his head.

Undeterred, Pascal carried out his experiment, the most important being those known, after the mountain they were conducted on, as the Puy-de-Dome experiments, carried out according to detailed instructions by his son-in-law who went up and down the mountain carefully hauling a mercury-filled tube and vat, painstakingly recording changes in the level of the mercury.

The results were written up by Pascal with notes, and later collected and published by his son-in-law in a text called *Experiences nouvelles touchant le vide*, a straightforward summary of his experiments, with a few warnings about received maxims. In a later letter, dating from 1648, Pascal indicated that he was working on a "Treatise on the Void", but whether he finished it or

not is unclear and all that's extant is a few fragments. But for one brief paragraph, there is almost no direct mention of vacuums or his experiments in the longest and only complete remaining fragment, the preface. Rather, the preface reads as the sort of general statement we might today think of as a discourse on method, not unlike Bacon's or even Descartes'. He warns repeatedly against dogmas and suggests that the world of the 17th century had things inside out: theologians were experimenting on matters of current science, while philosophers or scientists seemed governed by ancient or received knowledge. In matters concerning observations about the workings of the world, he argued for the power of the senses and of reason, rather than the received wisdom of the ancients. On the other hand, on matters of faith, to which philosophers have little access through reason or observation, authority must lie entirely with the authorized and experienced elders.

A great irony, however, is found in one of the tiny surviving fragments of the "Treatise on the Void". On the surface, it's another attack on dogma, reformulating what he has stated in various other texts, namely, that nature's so-called abhorrence of vacuums has nothing to do with nature itself, which, he repeats, is not an agent with desires; 'horror vacui' is merely a received maxim and nothing more. In matters of science, there is no room for dogma and received maxims. And so referring to all those philosophers, theologians and scientists who kept insisting on the impossibility of vacuums, he suddenly asks: "What is there in a vacuum that could make them afraid? What is there meaner and more ridiculous?" (Pascal 1963)

The irony, of course, is that today we know Pascal best precisely for his fear of the void, expressed, much later in his life, in one of the most repeated and emblematic sentences of modernity: "The eternal silence of these infinite spaces frightens me." This and many other passages come from the *Pensees*, a collection of writings most of which dates from the latter part

of Pascal's life, after 1654, when he largely though not entirely abandons science and mathematics to turn his attention mainly to a moral and theological contemplation of the lot of humanity.

Since the "Treatise on the Void" never surfaced and was never seen in Pascal's lifetime, it's tempting to imagine that writing about "the void" may have provided a sort of transition or conversion mechanism – a passage between two voids, a scientific and an existential one. Did the natural fact of the void eventually impose itself on Pascal as a metaphor which then, perhaps, assumed a different sort of facticity for him and therefore raised a whole different set of questions?

It is clear from the notes in *Nouvelles Experiences Touchant le Vide* (Pascal 1963) that he realized the physical implications of air pressure and altitude. The higher up you go, the lighter the air. It followed from this that if you rose high enough above the earth, beyond a certain point you would encounter a vacuum. Imagine that: the heavens, once full of light and matter and even spirit, the location of paradise and the afterlife, of the pearly gates and its keepers, suddenly vacated, drained of absolutely everything. And this, not as a fancy metaphor, but as a physical, mathematical, scientific reality, with an actual location in actual space.

Yet it seems almost impossible to avoid the obverse of this assertion. Was not the possibility of a physical void also simultaneously and fundamentally a metaphor? To what extent did the physical void function as an active reference to another sort of reality, of the *existential* void as a *real* condition? How did the concept of the void articulate, for Pascal, the realities of science with the experience of "eternal silence"?

There is no doubt that both before and after Pascal the idea of a void functioned as a compelling concept for justifying a range of cosmologies. Many theologians considered

accepting the existence of a vacuum as potential evidence for the existence of "incorporeal substances". Hobbes, by contrast, denied the existence of the vacuum on opposite grounds, that it was merely an idea taken on by the priests to gain the allegiance of the people. For Hobbes, this created a split in authority and therefore would lead to social instability. He considered vacuums, aka incorporeal substance, a priestly conspiracy to "usurp power" from the true and legitimate leader, the King (Shapin and Shafer 2005: 20-23). The void or the vacuum was an emptiness around which a secular-religious split was shaped from early on.

At any rate, some time during his short, brilliant life, Pascal's interest in the science of nothingness changed into an interest in the place of humans in the universe, two related ends of the same vision: Humans were suspended between the infinite and nothingness, the "Nothing from which he was made, and the Infinite in which he is swallowed up" (*Pensees,* sect. II, 72, Pascal 1963). One man's metaphor may be another's reality.

"When I consider the short duration of my life," Pascal wrote, "swallowed up in the eternity before and after, the little space which I fill, and even can see, engulfed in the infinite immensity of spaces of which I am ignorant, and which know me not, I am frightened, and am astonished…I see only darkness everywhere. Shall I believe that I am nothing? Shall I believe that I am god?..."

If this, like the phrase on the "eternal silence of these infinite spaces", strikes us now as a sort of banality, a naïve preoccupation, it is testimony to the fact of its mimetic success, its important niche in cultural evolution. For if Pascalian phrases have been repeated and bastardized so often, it is because they came into the world at a time in human history that

required them[123]. They articulated precisely an emerging anxiety that would become common over the course of the next few centuries. As Pascal himself mentions, the sense of nothingness I've related here to his vacuum, predates Pascal, perhaps even beginning with the Protestant reformation and the breakdown of the ascending earthly and heavenly hierarchies reaching up into the firmament – the protestant sky, after all, had no interceding angels. But the Copernican-Gallilean decentering and opening up of the cosmos is the clear precursor. The once-reigning Ptolemaic system was not different only in terms of the earth's centrality in the solar system. It also carried a completely different image of the universe as a closed and contained system in equilibrium. It was composed of nine concentric spheres, all of it wrapped in a layer of light called Empyrean – and outside all of it, in some accounts, was God. With or without God, this was a total and contained cosmology. So the Copernican-Gallilean model didn't just displace the relationship between the earth and the sun; it broke open the cosmos.

The infinite universe was born of this and along with it the finite human, a being plagued by the suspicion of its own unrescuable and irredeemable insignificance. While the modern era has been widely characterized as an era of human hubris and delusions of grandeur, it has equally been an era of radical self-doubt. Awe at the immensity of it all, and the tremendous

[123] The emergence of this relationship owes, in Pascal's words, much to Galileo and his telescopes, *expanding*, as Pascal wrote, *the number of moons and planets beyond our consideration,* and literally decentering the place of the human world in their midst. Both the infinite and nothingness have their own histories (Koyre 1957). The infinite was an old concept related to God's unboundedness – "The heaven and heaven of heavens cannot contain thee", says Solomon in Kings. In most traditions, of course, god was outside of physical systems of space and time, and so attributes like unbounded and eternal referred to a different order. The contemplation of the *physical* universe as infinite was in fact a recent phenomenon, according to Koyre. Although it had been broached by the atomists, most did not accept the possibility, and the dominant Ptolemaic system was a closed series of concentric circles with a final outer ring of light. The infinity of the universe was not brought up seriously till Nicolas of Cusa and then most clearly by Giordano Bruno, who was captivated, in Borges' words (1962: 191), by the liberatory power of the infinite. Descartes and Kepler thought about it, though like many others they didn't strictly think of the universe as infinite, but only as 'interminate' (Koyre 1957: 8).

sense of mystery had certainly struck generations of humans, but before Pascal no one had looked up at the heavens and expressed terror at its *emptiness*.

So Pascal's expression represents a key incision marking an experiential transition between the modern and pre-modern worlds. Having eliminated "horror vacui" from modern science, he also ushered it into modern social psychology. As scientific knowledge increased, it surely increased human power over matter, at least on a local level. Along with that local power, however, scientific knowledge also gave rise to a terrible suspicion that the whole of human existence might be but a random, temporary and insignificant accident in some remote outpost of an infinite and indifferent universe. Just as science was conquering disease, explaining chemistry, unlocking the secrets of matter and life, closing in on the Baconian dream of mastery over nature, the place and purpose of the human master/dreamer in this whole enterprise was being revealed as increasingly irrelevant and absurd. This is the paradox, that while we humans have been increasing our technical mastery over the local environment, our significance in the "big picture" has receded to a vanishing point – a random, purposeless existence in a universe itself due to expire as a result of either heat death or cold death, depending on which science you ascribe to. Alexander Koyre characterized this as the transformation of the meaningful cosmos into a cold and empty universe. After Pascal, the void increasingly became a central, if often unspoken, anxiety of modernity's – although the terms and intensities of that anxiety changed based on new theories and concepts that placed the emptiness of the universe in relation to either new secular end-time scenarios or visions of growing vitality, progress, order and complexity. The genealogy of these formations is central to this chapter's presentation of the Singularity movement and the production of a re-enchanted cosmos.

Immortalism's distaste for the wetness of biology, with its irritating tendency to decay and its lumbering pace of change, expresses not so much an abhorrence of the flesh as such, a carnal horror (horror carnis), as a desire to transcend the limits of *biological temporality*. Earlier, I argued that the immortalist extension of time and its visions of future lives constitute a counter-narrative to modern finitude and the elimination of the afterlife. immortalist narratives also do more. They open up the future not just in search of more time, but also in search of greater meaning, activating discussions about the metaphysical dimension of life and the universe. Foregoing the split between nature and artifice, immortalists and singularitarians are in fact reconnecting, via the concept of information, the human to the entire universe. This view of a "cosmic code" (Gardner 2007:214) re-establishes a connection that had been severed by science's projection of a cold, dying and indifferent universe. New cosmological canopies, developed specifically through science-based theories, are replacing the secular collapse of the older cosmological canopy (Berger 1967). This represents the full negation or counter-narrative to disenchantment, because a/ it is produced *via* a science-based explanation and b/ because it produces a theory of purpose, a telos, an existential or metaphysical position which modernity and science had heretofore abdicated. This is what I call re-enchantment.

Re-enchantment is not simply a return to a pre-modern era of unknowing enchantment, which would entail the denial of scientific principles and technical rationality, nor is it a weak restoration of a sense of awe or mystery, of which science was never devoid (except in tracts that depict all scientists as heartless, mechanized monsters disguised in lab coats). Rather, Re-enchantment is a particular reconfiguration of the premises and effects of modern disenchantment, emerging out of the same domains according to the same ontologies that produced disenchantment itself, bringing with it surprising concepts and futures of its own. The

convergence of a number of technoscientific projects – AI, Nanotechnology, Molecular Biology and Genetics, Life Extension – engaged by a network of neo-futurists, immortalists, AI researchers, nanotechnologists and transhumanists, has activated science-based cosmological visions in which humans and their intelligence are given a central purpose in the unfolding of the universe. The movement formed around the event-horizon of the Singularity is the most well-known version of these re-enchantment cosmologies. Yet the singularitarian re-enchantment only serves as a prelude to an obsolescence: humans are here to give rise to other, better minds, a prospect that makes singularitarians restless with both fear and exhilaration.

Welcome to the Singularity

The young announcer at the Singularity Summit steps up to the mic in front of a full house at the 92nd Street YMCA in New York and the tweeting audience falls still and silent.

"And now, the moment you have all been waiting for… Ray Kurzweil."

A dapper man with grey flannel trousers and a blazer enters, stepping lightly, almost like he's gliding. The clapping crescendos. He is short and tanned, with glasses, a thinning tuft of silver hair and some notes on a piece of paper. He is the unofficial leader and spokesman of the Singularity, he is the bona fide celebrity of geekdom. People are gathered here at the Singularity Summit to be with like-minded people, to explore new ideas in the realm of artificial general intelligence, rapid technological change and a super-intelligent future. But they are also here to see Ray Kurzweil.

Kurzweil has been called many things, from a kook to the prophet of techno rapture. But that doesn't matter to him. He firmly believes he's right and the critics are merely caught up in their own prejudices, habits and knee-jerk bio-luddite reactions. Their arguments, he says, are

based on incredulity rather than substance. Smooth on stage, with an impressive ability to synthesise information from a wide array of fields, Kurzweil goes down the list of serious criticisms of his thesis, countering each one with a confidence borne by his convictions. Specifically, convictions about his own futuristic predictions, wherein by 2045, or thereabouts, the pace of technological change will reach such dizzying speeds and such expansive breadth that "human life will be irreversibly transformed." (Kurzweil 2005: 7) That event-horizon is now commonly known as The Singularity.

The most important engine of this transformation will be the development of greater than human machine intelligence. The Singularity will start when artificial intelligence will become powerful and intelligent enough to build its own intelligent agents, leading to an unimaginably fast proliferation of intelligent agents, in what some have called an "intelligence explosion". Humans will ultimately merge with these agents, thereby simultaneously realizing a potential for immortality by transcending their biological heritage and becoming one with a universe now saturated with intelligence, self-awareness and knowledge.

Before predicting the future, Ray Kurzweil started out inventing pattern-recognition machines. He programmed the first text recognition device, invented the first text-to-speech device and built the first acoustic synthesizer. The text-to-speech device not only became the basis of modern scanning technologies, but was crucial for developing technologies to facilitate textual interactivity for the blind. It was adopted and lauded by Stevie Wonder, who in turn became the inventor's advisor on the design of the synthesizer, the Kurzweil 250, which came out in 1983 and, according to *Rolling Stone* magazine, revolutionized music[124].

[124] Kushner, David. 2009. "When Man & Machine Merge," in *Rolling Stone Magazine*. February 19, 2009.

In the mid-80s, Kurzweil turned to prediction, anticipating new trends and technologies in order to time his own inventions in step with the predictions he was making (Kurzweil 2005: 3). His first book, *The Age of Intelligent Machines* (1990), charted the acceleration of information-related technologies as exponential curves rather than linear growth up to a point where machines would develop to be faster and smarter than human minds. His second book, *The Age of Spiritual Machines* (1999), attempted to predict the "nature of human life" under conditions that would see machine and human cognition blend in what he later called an "increasingly intimate collaboration between our biological heritage and a future that transcends biology" (Kurzweil 2005: 3). Earlier, pioneers of cybernetics such as John von Neuman and Hans Moravec had predicted the merging of human and machine minds and the development of human or super human artificial intelligence. Computer engineers along with science fiction writers had foreseen a time when machine intelligence would supercede human intelligence. But Kurzweil put numbers and dates on the abstract predictions, using empirical data and mathematical models to predict the development of human level artificial intelligence or the merger of human and machine cognition by 2045.

Clearly interested in biology and survival, Kurzweil also co-wrote a book called *The Fantastic Voyage* (2004) in which he lays out an intricate regimen of supplements, diets and exercise that help extend healthy life while the rapidly growing fields of synthetic biology and nanotechnology solve the harder problems of decay and demise. In principle, the combination of the regimen and the pace of medical advance could lead him and us into indefinite life spans. In his 60s, Kurzweil proudly declares that he takes over 100 supplements, which have kept him healthy at a "biological age" closer to 40. He is also a member of the Alcor Life Extension Foundation, where his body will be cryogenically preserved in case things don't go exactly

according to his predictions. It would be a pity for the "prophet of the singularity" to miss the singularity.

But it was only in his last book, *The Singularity is Near*, that his talent for predictions took on a programmatic, even cosmological, form. The book is composed of much concrete data, sophisticated graphs of past trends and mathematical predictive models of the technological future, but its true heart is made up of oracular passages such as this:

> Once a planet yields a technology-creating species and that species creates computation (as has happened here [on earth]), it is only a matter of a few centuries before its intelligence saturates the matter and energy in its vicinity, and it begins to expand outward at at least the speed of light. Such a civilization will then overcome gravity (through exquisite and vast technology) and other cosmological forces – or, to be fully accurate, it will maneuver and control these forces – and engineer the universe it wants. This is the goal of the Singularity. (Kurzweil 2005:364)

This passage frames the worldview of singularitarians as they plan for the advent of superhuman intelligence and the ensuing "intelligence explosion". The movement's semi-official research institute and mouthpiece, The Singularity Institute for Artificial Intelligence (SIAI), based in Silicon Valley, has assumed the burden of thinking about and preparing for that occasion, which is due – according to Kurzweil's prediction – around 2045. Some quibble with the exact date, but as Ana Solomon, a research fellow at SIAI, assured me, "It's not the terribly distant future. People who've thought about it hard around the Institute seem to be putting maybe

about 50 percent probability mass around 2045, and 50% chance after. But I mean it's not like we're trying to touch five centuries from now or something."

It is close enough to demand preparedness and since "our institutions for directing scientific funding and so on aren't set up to deal with risks that are this tricky", then it falls to SIAI and others who "think carefully" and "rationally" about these matters to prepare us. Above-human-level AI would be "game changing," to use Solomon's words, but since the game could change in good or bad ways, humans need to work towards a "positive", rather than "negative", Singularity.

A *controlled intelligence*, it is posited, could solve, "instantly almost", all the major problems we humans face. At the same time, "If you *don't direct it carefully*," the SIAI's Solomon warns, "we die and they equally." A positive Singularity requires what is called *Friendly AI*, though even *Friendly AI*, if not "directed carefully" could unintentionally and accidentally destroy all we value. The illustration commonly used around the SIAI for an incidental case of destruction is a superintelligence optimized to produce paperclips. It would have the extreme power to rearrange the atomic structure of all matter in its vicinity—including, quite possibly, you—to obtain a lot of high quality paperclips. It may not despise you in particular, but your atomic arrangement is simply not to its liking. So the SIAI's goals are two-fold: to accelerate the advent of the Singularity, mainly by seeking effective ways to emulate the human brain; and to determine how to protect humanity from AI, principally by "coding" good values into its foundation.

These imaginaries of salvation and destruction through technology, these narratives about the possible end or transcendence of humanity, play into a long, interweaving history of technological utopianism, post-millenialism, apocalypse and other end-time scenarios in the US

(see Segal 1985; Quandt 1973; Wocjik 1997; Masco 2008). So it is not surprising that the Singularity and a number of other science-based futuristic projects have been most commonly interpreted by deploying the category of religion (Alexander 2003; Geraci 2010). Here I will trace a more sinuous history internal to science and secularism as they have attempted to define and delineate their domain. Outlining its cosmology through the essential concept of information, I will argue, that the singularitarian vision responds to and arises through science's own aporias, in this case specifically questions about purpose which science and secularism, in their disenchanting mode, have been unable and even unwilling to answer. I suggest that for its followers, the Singularity's cosmology *re*-enchants the universe within the parameters of what is taken to be science itself, but at the (Darwinian) cost of human obsolescence. The desire to both unleash and control AI reveals not so much an atavistic religiosity or sci-fi escapism but a basic tension between key positions in modernity's political ethos and epistemology: mastery and autonomy, determinism and freedom, control and meaning, progress and annihilation. Finally, I will argue that far from being marginal, the apparently extreme Singularitarian cosmology shares basic assumptions and important goals with the information-based sciences, and is being increasingly adopted as a "scientific world view" weaving "cosmos and culture" into a common destiny (Goertzel 2010; Dick and Lupisella 2010).

With annual summits, blogs, t-shirts, activists and even Singularity-bashers, the status of the Singularity as a movement is confirmed. Singularitarians themselves, however, tend to think of it as something more. "The problem with choosing or not choosing to be a part of our 'revolution'," Michael Anissimov, an organizer of the Singularity Summit, wrote on his blog, *Accelerating Future*, "is that, for better or for worse, there probably is no choice. When superintelligence is created, it will impact everyone on Earth, whether we like it or not." The

social destiny, implied by "our revolution", links up to the "very purpose of the universe" which, Kurzweil writes, "reflects the same purpose as our lives: to move toward greater intelligence and knowledge" (Kurzweil 2005:372). In books and lectures, that cosmic destiny is presented via predictions based on the analysis of large data sets and graphs covering *technological* paradigm shifts and canonical milestones throughout "the history of the world". Macrocosmic charts, laying out everything from the Cambrian explosion through the invention of agriculture to the development of computing power and the decoding of DNA, are combined with microcosmic analyses of changes in transistor size and price, and processing power over the last few decades. The graphs show that from time immemorial, technology has been obeying Moore's law[125] and developing at exponential rates. And according to the time-maps, we are currently sitting on the elbow of the exponential curves; technological development is about to rise into hyperdrive.

These graphed and charted claims rest on two premises. The first is that the entire universe is constituted by readable and, more importantly, useful information. Information, as we saw in the previous chapter, is simply regarded as patterns with varying degrees of complexity. Any arrangement of atoms may be considered information. The atomic structure of a giant rock may contain more total information than the genetic code of a human, but a rock's information is redundant and the total can be represented by a few simple specifications, so most of its information is useless. The more complex, efficient and *purposive* an entity becomes, the more intelligent it may be considered. Based on the ideas of some philosophers of mind, intelligence is considered to be "the activity of suitably arranged matter" (Churchland 1988: 167).

[125] First developed by Intel co-founder Gordon Moore, who claimed that transistor power is doubling every year. This 'law' is now commonly applied to all electronic devices using transistors and integrated circuits.

Through this frame, singularitarians chart the history of the universe in terms of the evolution of intelligence. Kurzweil breaks down this universal evolution into six epochs, presented entirely through the increasing organization of *information into intelligence*, such that information works here as a deus en machine, an ordering mechanism internal to the totality of the cosmos, from its tiny particulars to its gigantic generalities: from the appearance of physics and chemistry on earth (information in atomic structures), to the development of biology (information in DNA), to the rise of the brain (information in neural patterns), the creation of technology (information in design), to the merger of technology and human intelligence (the Singularity) to the final epoch – called "The Universe Wakes Up" or "The Intelligent Destiny of the Cosmos".

We are currently on the cusp of the fifth epoch, the epoch during which the Singularity will arrive. "Although neither Utopian nor Dystopian, this epoch will transform the concepts that we rely on to give meaning to our lives, from our business models to the cycle of human life, including death itself" (2005: 7). Of the sixth and final epoch, Kurzweil writes: "In the after math of the Singularity, intelligence, derived from its biological origins in human brains and its technological origins in human ingenuity, will begin to saturate the matter and energy in its midst. It will achieve this by reorganizing matter and energy to provide an optimal level of computation to spread out from its origins on Earth… the 'dumb' matter and mechanisms of the universe will be transformed into exquisitely sublime forms of intelligence…" (Kurzweil 2005: 14-21) The result will be an age of "greater complexity, greater elegance, greater knowledge, greater intelligence, greater beauty, greater creativity and greater levels of subtle attributes such as love." He closes the section on the sixth epoch with the following declaration: "This is the ultimate destiny of the Singularity and of the universe." In other words, Darwinian evolution,

based originally on random (non-teleological) biological development, is applied to all matter in the universe as it develops with purpose from simple, "dumb" matter into complex, "intelligent" matter. Whatever the data, cosmological ambition is the very purpose of Kurzweil's futurology: "I have begun to reflect on the future of our civilization and its relationship to our place in the universe," he declared right at the beginning of the book (2005: 4).

The second premise of the Singularity is that all information, however complex, is equally subject to rational calculation and computational manipulation. Information makes atoms, genes, neurons equivalent to each other via "bits", and through this equivalence, by flattening the universe into a primordial constituent, it generates the assumption that the larger complex structures that are built on them – eg. the human mind, the universe itself – are *thoroughly* subject to manipulation, editing, and reformation.

So in the symbolic order of the Singularity's cosmology, information is the essence of the universe; and intelligence is its teleology or purpose; the constitutive essence becomes increasingly organized as intelligence, the unit of "intrinsic value", as Ben Goertzel, director of research at SIAI, called it in a *Forbes* magazine article. But intelligence does not require biology – just some atoms and energy (Churchland 1988). Life, mind and this thing we call human are only the most recent and complex instances of its unfolding; biology is merely its current platform, a background technology, and a limited one at that. We are, to use Spinozan terms, a modality of information.

From the point of view of "intelligence", if there can be such a vantage, the universe seems optimized for its development: some gas issued from the big bang "evolved" into life, which could do a few limited things, then to brains, which could do a lot more, then to brain-created non-biological technology, which will soon do things better than brains. Indeed, our

very purpose as human versions of information in this very purposeful evolution of the universe is, in the words of Goertzel, "to give rise to other types of minds." He writes, "…life isn't just about one's own self. Just as there's intrinsic value in helping other humans, there's intrinsic value in helping higher intelligence come into existence" (Goertzel 2009).

From Physical Immortality to Metaphysical Purpose

Immortalist activities and practices both engage and raise existential issues; thus they become both an occasion for asking and answering them. The idea that physical immortality is also a way of getting a metaphysical glimpse into what this has been all about, where it is going, what it will look like, is actually quite common though it is not part of any official doctrine. These sorts of issues were raised in every one of my interviews, I suspect in part because questions about what a person is, what life and death are, and why one ought to pursue the conquest of one and the extension of the other inevitably lead, in a secular context, to questions about personal identity, survival and meaning. Here is one example from my nterviews:

> … it's that eternal question philosophers have been asking, Why? Why all this? And the only way to get an answer is to stick around long enough…[T]here's the daily things, going out, seeing friends, having a drink… but there's bigger things there: why are things the way are? And the only way I'm going to understand the universe is if I live long enough, be able to explore and expand my own intelligence….

Although these are framed as just *natural and eternal* questions, they are questions that arise in the context of specific practices and specific epistemological traditions. Here is another cryonicist's account: "The impulse that led me in this direction is just a desire that must be natural to me: to understand the big picture, of what this life is really all about. All of us grow up with this mélange of traditions about what the world really is about, what family's about, what society's about, what life means… I guess I was never really satisfied with a lot of those answers… I've read a lot about cosmology and the big bang and the universe and what's the nature of matter and how do cosmologists understand, or try to understand, where all this came from and where it's going. Meaning of life type questions." KK, a transhumanist who is also a life extension researcher, explained his interest as "Curiosity, about everything. How the universe really works. All the unanswered questions… It might take a thousand years to figure out just how the brain works. It might take thousands of years to figure out how the universe works. Why are we here? I guess I could find out by dying if there's anything to me besides this. I'm not betting on it."

While the scientific possibility of radical life extension is being taken as a possibility for opening up the closed temporality of secularism (a brief time of existence closed up by death without an afterlife), its production of a much vaster, infinite temporality also becomes an occasion for establishing a new relationship to the meaning of life and to the universe – a relationship of inquiry and discovery, yes, but also, as a result of time extension, a renewed possibility for finding a place and purpose in it. Whereas knowledge about our lives in the universe has been produced largely through studies of the past – the past of humans, of the earth, of the universe – here the possibility of true knowledge is turned towards the future. In the absence of explanations and cosmologies that would posit another world outside this one through

which this one would gain meaning, this is a way of imaging a future in which one might finally catch a glimmer of what existence, in its grandest, cosmological sense, might be all about. A young transhumanist about to sign on for cryonics, explained some of the issues he was thinking about:

> When you go to the root of how the universe started, it doesn't make sense that the entire universe could've started for no reason with no catalyst at the beginning, and if so what is that catalyst and where does it come from. So none of it makes sense to me, so I figure there has to be a higher meaning than just objects interacting with objects for no reason… I believe there has to be a higher power of some sort that has impacted the nature and structure of the universe in some way… for all I know it could be another race of humans who have gone through transhumanism to the point where they have the powers that they can manipulate time and space to the extent that they could've invented this universe out of another universe… I think science could get us to that point, the only question is how long will it take and will we survive that long…I've probably had these discussions with friends but I don't know that they care to strive to achieve these answers anywhere near the level I do. I just need to understand why things are. The other day I was spending a couple of hours on the internet researching these very strange fish or creatures that live in the deepest part of the oceans, just wondering why was that thing here and how did that thing get created, what circumstances came together in that environment to get that creature to exist, and it just creates more of a mystery of why is everything going on and it just keeps me at that top level of where

did we come from… I want to have an answer to what's going on here, on a universal scale!

Immortalism in general occasions a response to the temporal pressures of finitude, thereby engendering an everyday grappling with a larger existential purpose and eventually a constant reckoning of life on a cosmic scale. But with singularitarians the engagement is much more programmatic, not just implying or seeking, but positing a cosmology and explicitly invoking a sense of universal purpose.

In a recent book, Goertzel (2010) lays out what he calls a "practical philosophy", a "world-view and value-system" that "provides concrete guidance to the issues we face in our lives". The exercise of Joy, Growth and Choice are advanced "not only as personal goals, but also as goals for other sentient beings and for the Cosmos." Thinking daily about the grand themes of the cosmos is important because "these ideas have simple, practical, everyday meanings." He views "Cosmism" as a way to actively try and grow by being constantly aware of the universe, the power and limitations of science and human subjectivity, to break the habits of the mind, prepare for changes in the future and transform our selves. The Singularity represents to RT, Goertzel and others not just a scientific account of what the universe is, but an everyday grappling with a larger existential purpose, building a *cosmic sense of self*. That is why the Singularity has become a cosmology proper, in so far as it encourages and shapes considerations of selves on a cosmic plane.

Plenty of theories provide some account or other of the universe's origins and particular features. One science writer has classified at least 27 *types* of "cosmological conjectures" (Kuhn 2007), all of which he qualifies as being "logically permissible". But typically these accounts are

detailed analyses of how it came to be that the universe acquired the shape it has, how gases and rocks issued from a big bang, and how life emerged in it. This is "cosmogenesis" (Gell 1995) and ought to be distinguished from cosmology – there's a difference between an account of how the universe came to be as it is (why *this* universe) and an account of why it came to be at all, and what we are doing or ought to be doing in it, how our presence connects, or scales up, to its presence as a whole. Ontology is not necessarily cosmology – conceptualizing what things there are in the world is not necessarily connected to or an outcome of a total conception of the universe with an account of its origins and ends, of its essence along with an ethical or aesthetic stance towards the world (Geertz 1973). Ontologies delineate basic categories, but don't necessarily lay out our (human and non-human) place and purpose in the universe, how fundamental meanings in the order of the universe are reflected in human activity or meaning (Berger 1967:24-25). Science has spawned a good number of theories regarding the origins and particular features of this universe – cosmogenesis – but, even if one of them were to settle the matter, none would answer what one singularitarian called the "meaning of life type questions". This has come to mark the outer boundaries of the scientific domain, of what it's been authorized to cover and what it is forced to leave blank. While trying to explain the ultimate "how" questions – how it began, how it might end – most contemporary science does not stage forays into the "why" and "ought" questions (Gellner 1993). This has quite a bit to do with what is accepted as the domain of scientific authority, of what it's been entitled to cover and what it is forced to leave blank, empty and void – to give up, as Kant did, to matters of faith.

Although, as I argued, the metaphysical extremities have been generally handed over to religion, science and secularism have always demonstrated some ambition towards appropriating the cosmological domain. Gaining authority over the entire cosmos was an often overtly stated

scientific goal from Condorcet and Bacon onwards, though this was not always viewed to exclude religiosity – Newton is famous, though not alone, for his obsession with uncovering the Biblical secrets of the universe and the apocalypse through physics and mathematics (Noble 1999). Religion was slowly separated from scientific projects and along with that separation came an increasing burden – or ambition – for science to explain what religion had purported to explain (or with even more twists: for science to explain what science purported that religion had been there to explain). Without it, without such a cosmic explanation, science would have to remain incomplete and fragmented, live with its void.

That sort of cosmological ambition, sometimes still evident in physics' drive towards a "unifying theory of everything", was most clearly articulated by the famous 19th century Irish naturalist John Tyndall, who also was the first person to explain in scientific terms why the sky is blue. In a famous 1874 address to the British Association for the Advancement of Science he said: "The impregnable position of science may now be described in a few words. We claim, and we shall wrest from theology, the entire domain of cosmological theory" (Tyndall 1874). This is a clear extension of the general scientific goal, of the Baconian-Cartesian project of mastery as it pursues not just an understanding of local causalities, but also of fundamental macrocosmic forces, such as might reveal, under the omniscient, unifying lens of science, not only the beginnings of life and the beginnings of the universe, but also the why and wherefore of it all.

Far from revelaing a cosmological purpose, the sciences, natural and physical, have ironically been outlining a cosmology of collapse (Gell 1995). Pascal's original sense of horror got transformed into meaninglessness through particular and scientifically-derived scenarios. Lord Kelvin's projection that the sun would soon die, and with it all life on the planet, pre-

occupied Victorian scientists and seeped into literature and popular culture (Beer 1996). As it turns out, Darwin, jut like Frazer mentioned earlier, was amongst those harboring such fears:

> Believing as I do that man in the distant future will be a far more perfect creature than he now is, it is an intolerable thought that he and all other sentient beings are doomed to complete annihilation after such long continued slow progress. To those who fully admit the immortality of the human soul, the destruction of our world will not appear so dreadful. (Darwin's *Autobiography* quoted in Beer 1996:220)

Coming to terms with the finality of individual death is one thing; the secular world also had to come to terms with "complete annihilation". That entailed a much larger existential crisis, outlined here by Darwin as it was also broached by Schopenhauer and others, analyzed in earlier chapters. Weber, too, in developing the notion of disenchantment, projected the same fear: "Natural science gives us an answer to the question of what we must do if we wish to master life technically. It leaves quite aside, or assumes for its purposes, whether we should and do wish to master life technically and whether it ultimately makes sense to do so" (1963:144). For all its fast-paced achievements and technical advancements, science does not answer the crucial questions "why" and "whereto". To the contrary, Weber writes, "if these natural sciences lead to anything in this way, they are apt to make the belief that there is such a thing as the 'meaning' of the universe die out at its very roots."

Physics, then, was not just mapping the essence of the universe, but *envisioning* a final end to it, and producing, as a result, a new set of anxieties with respect to death and finitude. Alongside Kelvin's theory of the cooling sun, and lasting considerably beyond it, there arose also worries over the end of the universe through entropy – an important matter to be addressed in

more detail below. All of this before astrophysicists started to predict an earth-ending collision with a vagrant asteroid. Secular end-time anxieties have been shaped by science and its radical presentation of finitude and purposelessness, by the pre-determination implied by causality, and by the end of the universe as written into various fundamental laws of physics.

This is the paradox of science, that while it has increased technical mastery over the local environment, it has shrunk human existence to an absurd accident in a purposeless universe itself due to expire sooner or later. This torque of control and anxiety, of mastery and purposelessness, of expansive knowledge and finite existence sits coiled inside modernity. The Nobel Prize-winning French biologist Jacques Monod, while maintaining that God had been utterly refuted by science, could only repeat Pascal's terror: "The ancient covenant is in pieces: Man knows at last that he is alone in the universe's unfeeling immensity, out of which he emerged only by chance." Around the same time, another Nobel-prize winner, the physicist Steven Weinberg, pronounced, "The more the universe seems comprehensible, the more it also seems pointless" (Quoted in Easterbrook 2002). Without a cosmological explanation, or at least a cosmological promise, is scientific knowledge purchased only at the price of such absurdity?

It is not the loss of meaning alone, nor only the effect of instrumental rationality or of the elimination of the afterlife, that account for the condition of modern disenchantment. It is their combined and coiled movement, of science reaching into more and more spheres, from atoms up to multi-verses, whilst falling categorically short of the metaphysical extremities. Thus those extremities are reinforced as voids, as a collapsed cosmology. And it is this void that has often shaped discourses and practices around life and death in modernity. As a result, adapting (or facing up) to the cold reality of the universe became the common attitude in secular orientations towards the disenchanted world.

Some scholars and theorists have challenged the notion of disenchantment by insisting that enchantment never left the modern world, but was just blinkered out of our view by the myth of modernity (Haraway 1998, Bennet 2001). They point, for example, to the panoply of hybrid and odd entities brought forth by science itself, or to the remaining mysteries of the universe or the affective forces of art, fetishism and literature. "How could we be capable of disenchanting the world, when everyday our laboratories and our factories populate the world with hundreds of hybrids stranger than those of the day before?" asks Bruno Latour (1993:115).

But this position confuses a sense of awe and alterity, an acknowledgement of mysteries, with enchantment. Disenchantment was not just a loss of the *sense* of awe or mystery but the production of a world view and the predominance of tools that could translate that very *sense* into a set of explainable causal chains; that sense, in other words, would appear immediately limited or even false, a de facto illusion better explained through something like the brain's neuronal firings, or a genetic mutation. New hybrids and leftovers of the sacred do nothing to counter, in principle, this sort of disenchantment.

Nor can we return to enchantment through a forced resacralization of the natural world against its technologised, materialist domination by human rationality, as per the exhortations of ecospirituality (Moore 1997). Again, this would require a Quixotic attempt to step out of the scientific paradigm altogether, deny the immanence of the world, and, most importantly, change the meaning of sacredness and therefore its original force (for example, because ecospirituality is cornered into saying, "*we must* think nature sacred", it is robbing the true force of sacredness, whose authorizing source must remain itself mysterious and sacred, and so can never take source in the reflexive act of a subject "we".)

Finally, another weak strategy in the fight against disenchantment has been a secular acceptance of humility and death's place in human life and nature (Crichtley 2004, Kass 1993, 1974). This reaction is really not about enchantment in any sense, but rather a common ethical argument against modernity's supposed hubris. It merely says, progress is fine, but know thy place, human, and proceed with caution.

Disenchantment entailed the elimination of a cosmology, of a transcendent teleology. Charles Taylor outlines the cosmological breakdown thusly: "People used to see themselves as part of a larger order. In some cases, this was a cosmic order, a 'great chain of being', in which humans figured in their proper place along with angels, heavenly bodies, and our fellow earthly creatures…. At the same time as they restricted us, these orders gave meaning to the world and to the activities of social life… The discrediting of these orders has been called the 'disenchantment' of the world…" (Taylor 1991:3).

That lost order, the purposeful teleology, is not restored through a sense of parochial awe or the observation that hybrid and strange forms continue to exist or be produced – a petunia with a strand of human DNA might confound the FDA or scramble a few social categories but as an entity it is entirely explainable by science which after all put it together. Their strangeness may well be short-circuiting some of our categories, but the things themselves are nevertheless explainable, calculable, in the very terms of scientific rationality. They do not add up, in themselves, to a new or different order, to a new sense of purpose in life.

The Singularity's informatic cosmology proposes a different approach, one that imagines unity and purpose for the universe through concepts that are posited to be independent of humans (information and intelligence), constitutive of reality itself and derived from materialist, scientific sources. Goertzel, for instance, says that the new technologies are "as much about *mind*

and reality as they are about AI algorithms" (Goertzel 2010:4, emphasis added). But there's nevertheless a central role for humans. What effectively is offered in the infusion of matter with intelligence, in the "waking up of the universe", is the possibility of restoring to our disenchanted universe a sense of *its purpose* and of *our* role in *its* unfolding. Its most intelligent agents so far, humans are not just the decoders of the natural world, but the purveyors of the next epoch. Darwinian evolution's accident-based, lumbering pace of change, "its lack of abstract intelligence, its reliance on random mutations, its blindness and incrementalism" (Yudkowski 2008:323), to quote the founder of the SIAI, will be superceded by a super intelligent agent engineered by humans.

> When I asked Goertzel to elaborate on the idea of being surpassed or superceded, he said: Not being a religious person there's no basic value that I adopt on faith or instinct, at least not on an explicit level. So I thought about the core values that seemed important to me. And, of course, it's complex, the definition of those concepts. But basically I isolated our joy, growth and freedom. If you begin with these, you want happiness, growth and change, and autonomous beings and minds being able to choose. Then the value of intelligence comes out of those. Intelligence enables growth and creation of new patterns. It's a way of realizing those things. Intelligent creatures can exercise growth and choice better than rats. Growth goes beyond humans, beyond mushrooms and ants and such. Are ants obsolete or pigs obsolete? They exist and continue to do what they do, but they are not the most complex or most interesting creatures on the planet. That's what I'm assuming is the fate in store for humans. I hope some humans continue to exist in their current form, but there's going to be other minds. If it really came down to it, which is

not a realistic choice, but if it came down to it I wouldn't hesitate to annihilate myself in favor of some amazing superbeing.

Goertzel's spirit of sacrifice turns obsolescence into purpose. Early on, Weber had observed that this - obsolescence – was indeed the very essence of scientific progress. "In science, each of us knows that what he has accomplished will be antiquated… That is the fate to which science is subjected; it is the very *meaning* of scientific work… Every scientific 'fulfilment' raises new 'questions'; it *asks* to be 'surpassed' and outdated… In principle, this progress goes on *ad infinitum*" (Weber 1958: 138). Now, when life itself becomes a background technology, then life also gets slated for obsolescence.

Amongst singularitarians, this prospect generates both exhilaration and fear. Superintelligence is desirable and dangerous; the end of biological humanity is liberating and frightening. Obsolescence is good, but annihilation is not. As mentioned earlier, SIAI is working towards mitigating what they term an "existential threat". One idea is to code powerful AI with good values at inception; such an entity might still have the immense power to destroy the world, but, thanks to the proper coding of its values, will not *want* to do so.

But then how *autonomous* can friendly AI be, if its values are pre-determined and its actions already circumscribed by code? And if it's not *truly* autonomous then can it still be considered *truly* intelligent?

To succeed in achieving the ultimate conclusion of scientific materialism, that of producing "a mind", strategies like AI, neural nets or Whole Brain Emulation are reaching not just for the brain's neuronal firings, but for that opaque quality in the modern ethos called autonomy, the legal and political foundation of the rational sovereign subject. Any human-level

intelligent machine must, *in principle*, be able to think and act *for itself* – ie. not accept what has been given – otherwise it does not qualify for the most important attribute modernity has accorded intelligent beings. But autonomy also always includes the possibility of destructiveness. In fact, extending Bataille (1997), an act of destruction, devaluing that which has been *given* as value, may be regarded as the ultimate mark of autonomy. In order to be read also as Autonomous Intelligence, AI must have the ability to make its own decisions, including a decision to annihilate us.

The Singularity's dilemma inhabits a pre-existing contradiction in the constitution of the modern political subject, arising out of the destructive power implied by autonomy and the concomitant need to control it – through violence, obedience, or code. The law and politics of a modern liberal State accord ultimate value to individual autonomy, but also place hard limits on it, circumscribing it in cases of potentially disturbing values and modes of behavior such as dementia (Dworkin 1994), insanity, criminality (Giddens1991), violence and destruction. Similarly, the sciences are caught between the naturalized mind, in which human action is determined (by code), and personal and political experiences that seem to confirm and require autonomy, a capacity to buck the code. Mastering the mind – the technical version of the enlightenment ideal of self-possession or self-mastery, which was the foundation of legal and moral notions of personhood – can mean control over it as well as what some have called "out of controlness" (Dupuy 2009). Here is Kevin Kelly, pioneering on-line man and co-founder of Wired: "It took us a long time to realize that the power of a technology is proportional to its inherent out-of-controlness, its inherent ability to surprise and be generative. In fact, unless we can worry about a technology, it is not revolutionary enough" (Kelly 2006).

The final dream of the Singularity, which is also the dream of AI, implies simultaneously the dream of mastery and the abdication of control – the Singularity marking the point of abdication beyond which nothing can be mastered. Human obsolescence marks the outer limits of human control over the world. The end-game of the enlightenment's desire for mastery is the point at which human control and calculation must be sacrificed (in this case, to an "amazing superbeing"). That *would* re-enchant universe.

The Telos of Information

Though it has been portrayed as a sci-fi geek fantasy or a marginal cult of "kooks",[126] the Singularity operates in a much larger context. While the Singularity takes the logic of information and computation to its cosmological end, explicitly claiming the metaphysical extremities, the same assumptions underlie the mainstream convergence of the information-based sciences,[127] with which the Singularity "grew up". Those assumptions are increasingly being adopted to shape a wider "scientific worldview" regarding the evolution of the universe, in which the key figure is "the cosmic primacy of information" (Gardner 2006:25).

Increasingly scientists and theorists are spinning information as the concept with the most privileged relationship to reality. Since all transmission in the physical world works through algorithmic functions, so the world must be constituted by such functions. The world, then, is not only representable by computation but a result of it. Information is "every particle, every field of

[126] For a recent example, see biologist PZ Myers' blog post (last accessed August 17, 2010): http://scienceblogs.com/pharyngula/2010/08/ray_kurzweil_does_not_understa.php

[127] Though he strongly commits himself to interpretation via religious categories such as 'visions of heaven', Geraci (2010) outlines a similar connection between general AI, the information-based sciecnes and the Singularity.

force, even the space-time continuum itself", to use the words of the physicist John Archibald Wheeler. Freeman Dyson (2011), another physicist, has written:

> The explosive growth of information in our human society is a part of the slower growth of ordered structures in the evolution of life as a whole. Life has for billions of years been evolving with organisms and ecosystems embodying increasing amounts of information. The evolution of life is part of the evolution of the universe, which also evolves with increasing amounts of information embodied in ordered structures, galaxies aqnd stars and planetary systems. In the living and in the nonliving world, we see a growth of order, starting from the featureless and uniform gas of the early universe and producing the magnificent diversity of weird objects that we see in the sky and in the rain forest. Every where around us, wherever we look, we see evidence of increasing order and increasing information.

As one writer has observed, this means that "if we can theoretically grasp the structure of information it is technologically possible to capture the surface and anatomy of reality… and in this way information about, for, and as reality can be structured in bits with powerful results… engender[ing] the hope that information can reveal the secret of reality" (Borgman 1999: 140/174). For some that possibility has already become part of research designs and goals. In his book *Programming the Universe*, MIT engineer Seth Lloyd writes: "The history of the universe is...a huge and ongoing quantum computation. The universe is a quantum computer" (Lloyd 2006: 3). Lloyd's work at MIT aims to create quantum computers, thereby joining up with the universe's "innate information-processing power." Like Stephen Wolfram, computer scientist, mathematician and recipient of a MacArthur at the age of 21, the futurist James Gardner speaks

of "the Software of Everything" on which the natural cosmos runs and which will give rise to a cosmic mind.

How did information come to play this role as the ghost in the machine of the universe, the "cosmic code" running the universe in the process of manifesting itself, in us, by us, through us and beyond us? An important aspect of information theory which has received less attention, is that information processing is not only dynamic (it implies the opposite of stasis) but also directional or purposive. By theorizing transmission in terms of order vs noise, it is already positing a *system* within which order and noise may be distinguished, a system within which the *goal or purpose* of transmission is already present. Shannon's equations and Information Theory in general require an already-known probability space in order to determine such things as redundancy – the English alphabet, for example, is one such system with a probability space of 26.

Aside from the mathematical problem of systems, "purpose" was an early concern in the cybernetics of the mid-century and crucial to the second order cybernetics of self-organization. Shannon's older rival, Norbert Wiener, was obsessed with it. In "Behavior, Purpose and Teleology" (Rosenblueth et al 1943), a co-authored paper, Wiener and his colleagues develop the theory of electronic feedback loops, examining both positive and negative feedback. Their main concern was behavioristic – as much in electronic circuits and mechanical objects, as in humans and animals – as opposed to functional. That is, they aimed to jettison an explanation based on intrinsic and internal organization of an entity in favor of an explanation based on its relationship to the environment as a consequence of inputs and outputs. The problem was that in order to even interpret any event as a behavior resulting from a sequence of inputs and outputs they had to have a sense of the goal, or end-state, of that behavior. Otherwise, the event, though it would

still be a sort of behavior, would be what they ended up calling "random" – the chaotic result of no input in particular. "Purposeful denotes that the act or behavior may be interpreted as directed to the attainment of a goal… Purposeless behavior is that which is not interpreted as directed to a goal" (Rosenblueth et al 1943:18). They defined purpose mechanistically: "All purposeful behavior may be considered to require negative feedback" (Rosenblueth et al 1943:24). In lay terms, purposeful behavior is that which sends output into the world until it receives the input that satisfies a particular pre-defined condition. For example, a missile is not purposeful in itself; it is so only when it seeks heat until it finds it. When this was coupled with information theory it yielded the idea that information as such was not useful, but information processing (input-output) was: it was a movement away from noise towards order. Information *processing* entities were always already purposeful entities. It was the trope of purpose that pushed later cyberneticians towards the formulation of emergent systems and self-organization. So while information theory banished 'meaning' from communication, it smuggled teleology back into science.

To understand the importance of this move towards teleology one must re-emphasize the sense of the background noise, so to speak, from which its order was wrought. I'm referring indirectly to that sense of "cosmological collapse" which I described in this section; but I am also referring directly and very specifically to one version of it, the anxieties generated by the second law of thermodynamics and the idea of entropy.

The idea of heat death, originally postulated by a german physicist in 1854, derived from the second law of thermodynamics. The second law held that energy cannot flow from cold to hot and the unidirectional flow of energy in an isolated system will tend towards uniform temperature or energy equilibrium and therefore a final state of stasis, which in living organisms

would be death. Passed through a cosmic lens, this theory of thermodynamic entropy implied that the entire universe would eventually lead to a state of universal constant temperature. Thus all energy-dependent forms, especially life, will cease to exist in the universe. In a materialist infinite universe without an afterlife or immortality, heat death meant not only that the purpose of our individual lives was unfathomable but that all of existence, the whole universe, seemed pointless.

Much of the general anxiety of the age was narrated through heat death and entropy, concepts that spread from HG Wells to Freud and on. As Hayles (1999:101) puts it: "the tension between the first and second laws, between stability and degradation, runs like a leitmotiv through turn-of-the-century cultural formations". The philosopher of science Bertrand Russell (1903) was not atypical when, sounding like Camus, he wrote: "That man is the product of causes which had no prevision of the end they were achieving; that his origin, his growth, his hopes and fears, his loves and his beliefs, are but the outcome of accidental collocations of atoms… that all the labors of the ages, all the devotion, all the inspiration, all the noonday brightness of human genius, are destined to extinction in the vast death of the solar system, and that the whole temple of Man's achievement must inevitably be buried beneath the debris of a universe in ruins – all these things, if not quite beyond dispute, are yet so nearly certain that no philosophy which rejects them can hope to stand."

Russell described "the world which Science presents for our belief" as becoming all "the more purposeless, more void of meaning." Yet, like Weber, he braces himself and urges us to go on doing our work. "Amid such a world, if anywhere, our ideals henceforward must find a home… Only within the scaffolding of these truths, only on the firm foundation of unyielding despair, can the soul's habitation henceforth be safely built…"

The existential lament of science and scientists continued through the 20th century[128] and cybernetics was not immune. In 1943, Wiener wrote: "We are swimming upstream against a great torrent of disorganization, which tends to reduce everything to the heat death of equilibrium and sameness" (Gleick 2011:237; Wiener 1989:xiii). Interestingly, he connects this to existentialist philosophy: "…heat death in physics has a counterpart in the ethics of Kierkegaard, who pointed out that we live in a chaotic moral universe. In this, our main obligation is to establish arbitrary enclaves of order and system…" It is with this as backdrop that we can understand the echoes of the move in cybernetics to suggest that information theory actually does away with entropy: information theory, it was said, shows that order *increases* in the universe![129]

Information theory thus legitimized teleology within the bounds of science. Biologists who had turned away from teleology as a reaction to vitalism – no modern biologists would want to be labeled a vitalist! – found it possible to talk about biological purpose trough information without bringing up the spectre of vitailsm (Fox Keller 1995). That informatic move to molecular biology was obviously very fruitful, but it was limited to thinking about DNA as a code for the unfolding of the organism. Starting in the mid-80s, a small but growing number of physicists and biologists began to reclaim teleology in a larger sense, in a larger unfolding, so to

[128] The Nobel Prize-winning French biologist Jacques Monod, while maintaining that God had been utterly refuted by science, could only repeat Pascal's terror: "The ancient covenant is in pieces: Man knows at last that he is alone in the universe's unfeeling immensity, out of which he emerged only by chance." Around the same time, another Nobel-prize winner, the physicist Steven Weinberg, pronounced, "The more the universe seems comprehensible, the more it also seems pointless" (Quoted in Easterbrook 2002). Also see Barrow and Tipler (1986).

[129] Hayles (1999:102-3) makes the same point, asserting that Shannon's move of retaining a connection between entropy and information was a "crucial crossing point, for this allowed entropy to be reconceptualised as the thermodynamic motor driving systems to self-organization rather than as the heat engine driving the world to universal heat-death...as a result, chaos went from being associated with dissipation in the Victorian sense of dissolute living and reckless waste to being associated with dissipation in a newly positive sense of increasing complexity and new life."

speak, in part thanks to information theory as well as to the marriage of information theory and biology (for eg., Barrow and Tipler 1986; De Duve 1995). In most of these teleological theories of the cosmos, the emergence of life or human intelligence is used to prove the directionality of the universe. But the teleology does not end with the human in the anthropological sense; rather, like Goertzel's vision, it passes disanthropically through us to other forms.

Often in reference to these same physicists and their theories, contemporary futurists have re-tooled and popularized a fully purposeful cosmological vision. Important amongst these figures is someone I've already mentioned: William Sims Bainbridge, the social psychologist, singularitarian and transhumanist who would become Program Director at the NSF's Information and Intelligent Systems. In 1982, Bainbridge had penned a utopian manifesto called "Religions for a Galactic Civilization" (Bainbridge 1982) explaining the need for a quasi-religion to motivate work towards a Galactic Civilization. That manifesto sat silent for over two decades until in the new millennium it spawned its own techno-cosmological movement, "The Order of the Cosmic Engineers"[130], whose goal is "to permeate our universe with benign intelligence, building and spreading it from inner space to outer space and beyond." They conduct their activities in the virtual world of Second Life, though there are real people involved, separated by time and space: Giulio Prisco, an Italian theoretical physicist and active transhumanist; Philippe Van Nedervelde, Executive Director of the European Foresight Institute, a nanotechnology advocacy group; and Martine Rothblatt, the previously-mentioned director of Terasem.

In 2001, Bainbridge and a colleague organized a conference sponsored by the National Science Foundation (NSF) and the Department of Commerce to explore the potential of the information sciences. That conference, and the resulting report, popularized the concept of

[130] Goertzel's aforementioned book (2010) on Cosmism, acknowledges a debt to the OCE in outlining its principles.

'convergence', referring to the unification of nanotech, biotech, informatics, and cognitive science (NBIC). The NSF report stated that convergence is driven by the development of new paradigms that are, for the first time in human history, allowing for "a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the most complex system yet discovered, the human brain" (Roco and Bainbridge 2003: 1). Such an understanding is enabled by the treatment of everything – mind as well as matter – *as* "information"[131]. The essays in that and subsequent volumes (Roco and Bainbridge 2005) projected a radical rupture – on a quasi-Singularitarian scale – in the landscape of human civilization, promising technologies such as "supercomputers the size of a cell in every human body, promoting health and preventing disease", and "100,000 machines generating energy from solar cells that can all fit on the head of a pin" (Canton 2005). Without the innovations of convergence, they warn, "the future of civilization itself is in doubt" (Bainbridge and Roco 2005: 2).

Informed by these origins, the NBIC sciences, like the Singularity, assume that information is constitutive of the world, that computational logic can represent and manipulate the universe (Golumbia 2009) and "the mind" can be taken beyond biology, beyond the wetness of its human platform. It is partly because of this close affinity in their worldviews that the Singularity has attracted a significant number of accomplished followers from that more mainstream NBIC world of science and technology. The 2009 Singularity Summit, with nine hundred-plus in attendance, attracted experts as diverse as philosopher of mind David Chalmers, NYU cognitive psychologist Gary Marcus, Wired editor Gary Wolf, and famed mathematician,

[131] The ontological or epistemological status of information is unclear and undertheorized (Thacker 2005). One might pause to ask: what is information itself (material, immaterial, energy, force…?) What might fall outside of the purview of 'information'? What exactly is being eliminated when what's not complex is considered uninteresting, what's not calculable considered noise, or simply useless?

physicist and inventor Stephen Wolfram. Kurzweil himself has close links to NASA, Google and much of Silicon Valley, and acts as advisor to DARPA, the US Department of Defense's advanced research arm. He organizes a Singularity University campused at NASA over the summer.

Through these personal and institutional networks, the information-to-intelligence view of the cosmos is beginning to spawn an effort to formalize the informatic cosmology by drawing on a range of sciences and scientists, imbuing their universal story not just with the usual teleologies of science and secularism, but with a technological unfolding in which human toil in the hitherto indifferent universe is reinscribed with a quasi-transcendent purpose – but without abandoning a commitment to scientific principles. Examples include complexity theorist James Gardner's recent *The Intelligent Universe*, internet pioneer and a co-founder of Wired magazine Kevin Kelley's 'The Technium' (on line), physicist Frank Tipler's *The Physics of Immortality* inspired by Jesuit paleontologist and heretic Teilhard de Chardin's Omega Point.

The most comprehensive example is a recent NASA-sponsored publication, *Cosmos and Culture* (Dick and Lupisella 2010). Including multi-disciplinary contributions from anthropologists and philosophers to systems theorists and engineers, and edited by Steven Dick, astronomer and NASA's chief historian, with Mark Lupisella, a NASA scientist, the volume is an effort to tie sociobiological views of cultural evolution to the physics and astronomy of the cosmos. Hence the new term "cosmocultural evolution" (Lupisella 2010), and the declaration that we are witnessing the "emergence of a novel scientific worldview that places life and intelligence at the center of the vast, seemingly impersonal physical processes of the cosmos" (Gardner 2010). From the NSF to NASA, the ultimate dream of convergence is to make the cosmos cultural and culture cosmological. Astronomer and NASA's chief historian, Steven Dick

(2000), who also moves in these futurist circles, has written: "Surely the modern cosmos may serve as a new focus of meaning; it already has for many, and the numbers are increasing… As we learn more about our place in the universe, and as we physically move away from our home planet, our cosmic consciousness will only increase." Dick, Bainbridge et al have been working towards preparing the ground for this shift (Bainbridge 2007). Dick concludes:

> The more we know about *science*, the more we know culture and cosmos are connected, to such an extent that we can now see that the cosmos is inextricably intertwined with human destiny… impinging on (and arguably essential to) questions normally *reserved* for religion and philosophy. (Dick 2010, emphases mine).

This clearly echoes (or revives) the old Tyndallesque ambition for science to appropriate the metaphysical extremities, to boldly go where only religion (or philosophy) has gone before.

It is clear that the NBIC's forays into understanding not just the natural world, including the human body, but also the cultural world, including the human mind, and more importantly universal purpose, in terms of computation and information will shape more and more of our lives. Re-enchantment cosmologies gleefully breakdown the ontological boundaries of the humanist, modern, scientific world in their technoscientific imaginaries of the future in which humans will have been radically transformed if not made obsolete. In the meantime – the meantime being a temporality anathema to the Singularity – they are producing some <u>actual</u> transformations: transformations in the definition, expectations and purpose of being – or not being – human, transformations that should be neither dismissed nor disdained. The outlines of the category human are being challenged in many different ways, in many different domains and

this is only one of them. Obsolescence is well under way. Information has eclipsed the organism (Doyle 2003) and biology is in a practical and ideological sense obsolete. So with it the human as biological organism – which is why we have all the new terms floating around to define the present state of being and not being human: postvital, postbiological, posthuman, transhuman, cyborg.

And, after all, as Kurzweil told me in an anthropological moment, "Human is only that which is capable of transforming itself."

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