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RADIATION ILLNESS REPRESENTATION AND EXPERIENCE:

THE AFTERMATH OF

THE GOIÂNIA RADIOLOGICAL DISASTER

by

TELMA CAMARGO DA SILVA

A dissertation submitted to the Graduate Faculty in Anthropology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, the City University of New York.

2002

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This manuscript has been read and accepted for the Graduate Faculty in Anthropology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

26th April 2002
Date

Chair of Examining Committee

4/26/02
Date

Executive Officer

Prof. Leith Mullings

Prof. Vincent Crapanzano

Prof. Veena das (O.R.)

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

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ABSTRACT

RADIATION ILLNESS REPRESENTATION AND EXPERIENCE:

THE AFTERMATH OF

THE GOIÂNIA RADIOLOGICAL DISASTER

by

Telma Camargo da Silva

Adviser: Professor Shirley Lindenbaum

This work explores the ways in which radiation illness, caused by the collection and break-up of an abandoned medical radioactivity unit in Goiânia (Brazil), in1987, is framed during ten years (1987-1997) by the different social actors involved: the state government, the Brazilian nuclear experts, the "radioacidentados" and the policemen who worked in the response to the catastrophe. Drawing upon extensive field research done from 1996 to 1997, I argue that a disaster is a processual event, and its understanding implies a long term observation of the field of forces that shape the official knowledge of the disaster and produce the social suffering of those groups that are in positions of vulnerability. In Chapter one I introduce the 1987 events, make comments on doing fieldwork as a native anthropologist and present the theoretical framework of my ethnographic approach. I focus on narrativization as a medium through which the lifeworld is reconstituted and revealed in the disaster aftermath. Chapter two discusses

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the 1997 identification of the "cesium policemen" and the interpretive production of the various disturbances that afflict them in the aftermath of the disaster. I show that the vulnerability of this police subgroup is echoed in the manifestation of institutional power undertaken for delegitimizing their claims and for disqualifying them as professionals at risk of radiation. Chapter three presents the scenario of the disaster as well as the institutional agents responsible for the official categorization of the affected populations and reveals the experiences of being a radiation survivor. Chapter four shows that the production of the disaster knowledge results from the confrontation between official memory, sustained by the institutional power, and subjugated knowledges experienced by survivors' memories. In Chapter five I maintain that disasters rather than events isolated and temporally demarcated in exact time frames resulted from a social dynamic allowing for multiple interpretations of the disaster which were not confined to the emergency phase. I conclude that along with the metric suffering established by the biomedical understanding, radiation disaster brought trauma, distress, and disorders which were provoked not exclusively by the physical and mental pain, but also by the struggles people undertook concerning health, legal, and moral issues arising in the disaster's aftermath.

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DEDICATION

To the people who survived the 1987 Goiânia radiation disaster and who shared with me theirs memories, their intimacy, and their everyday experiences.

To my advisor, Shirley Lindenbaum, who has been a source of continuing emotional, intellectual and academic guidance since my acceptance into the Department of Anthropology at CUNY - Graduate Center.

To my parents, Jovita Camargo da Silva and Manoel da Silva, who despite their poor formal education directed me to academic life by giving me financial support and guidance in the early years of my existence.

To Marco Antonio Lazarin, companion of countless experiences of love and thoughtfulness who has introduced me to the practices of Tai Chi and with whom I shared the first impressions and feelings at the scene of the Goiânia disaster.

To Adele da Silva Lazarin, my daughter, who has participated in every moment of this dissertation work and when the journey as a graduate student, professor, household keeper and mother was too heavy, has always tried to assure me that I would be able to get to the end.

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ACKNOWLEDGMENTS

I am indebted to everyone who made possible the accomplishment of this work. Considering that it has been a long- term project many institutions and individuals have supported me in different ways and I apologize if I do not remember them all.

First of all I would like to thank all the survivors of the Goiânia disaster and the professionals who worked in its aftermath for receiving me into their lives, sharing with me their times, and for disclosing their memories, their experiences and their personal archives.

I was fortunate to receive generous funding from the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Grant number 200941/91-7, the Brazilian National Agency that supported my doctoral course work from 1992 to 1995 and my trip from Brazil to U.S.A., in 2002, for the final phase of my dissertation. Funding for the fieldwork research was provided by the Wenner-Gren Foundation for Anthropological Research (Grant number 5969) to whom I am grateful.

At institutional level, I am indebted to the Universidade Federal de Goiás (UFG) that allowed me a paid leave from 1991 to 1995 and mostly to my colleagues from the French Literature Department who took over my classes and my students during that time. From the same University I am grateful to the Social Sciences Department for receiving me in 1996 as one of its professors and also to the staff and the director of Museu Antropológico, anthropologist Marco Antonio Lazarin, who from 1998 to 2001 gave me the administrative support for research work. I acknowledge the assistance of

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the Coordination of the Projeto de Salvamento Arqueológico Pré-Histórico da Usina Hidrelétrica Serra da Mesa – Goiás for the production of the maps I use in my dissertation, which were made by the cartographer engineer Nilton Ricetti Xavier de Nazareno, and for paying two months work for a research assistant, the student Hévila Peres Cruz.

My data collecting at different institutions was possible by the kind cooperation of individuals who understood my research purposes. I am indebted to those people who help me find documents and mostly to understand how the institutions and organizations related to the disaster work. At the Fundação Leide das Neves Ferreira, the psychologist Suzana Helou; at the Comissão Nacional de Energia Nuclear, the librarian Elaine Campos Pereira; at the Associação das Vítimas do Césio – 137, Jadyr Alves de Andrade; at the Goiás Chamber of Deputy, Arédio Teixeira Duarte, Gencerico, the deputy Valdi Camárcio and his secretary Gilza Azevedo; at the Brazilian Parliament, in Brasília, the sociologist Márcia Ferreira; at the Police Office Organization the sergeant Carlos Santana Lira, the soldier Marques de Sousa Rodrigues and the Colonels Emanuel Barbosa da Silva and Cícero Camargo do Prado.

Moving in between countries with a small child and having also a home and a profession was made possible because some friends helped me in various crucial moments. I am indebted to Gale G. Goodwin for receiving me in her home when I first arrived in U.S., back in 1991, and to Nei Clara de Lima for open to me her place when I returned to Brazil in 1995. My gratitude also to Ivanilde Gonçalves de Moura, Francisco Rabelo and Gilberto Marcos Lozi for all they did when I was away from Brazil.

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At the Graduate Center, I would like to thank my advisor, Professor Shirley Lindenbaum for her continous guidance, support and editing of my original writings. This dissertation work would not be possible without her inputs, comments and the patient exchange of e-mails messages and post-office letters over the years. I would like to extend my gratefulness to my dissertation committee for comments and proofreading: Prof. Leith Mullings, Prof. Vincent Crapanzano, Prof. Veena Das and also Profs. Ida Susser and Kenneth Erickson who were on my proposal committee in 1995. I am indebted also to those who were not on my committee but who in 1995 read my proposal and offered suggestions: Prof. Marc Edelman, Prof. Jane Schneider and Prof. Eric R. Wolf. I would also like to thank the professors I had during my courses for their intellectual guidance, and Terri Vulcano and Ellen De Riso for opening for me the ways through the administration' s rules and for alerting me about the deadlines.

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I was fortunate during the last year of my dissertation writing process, in Goiânia, to have the assistance and help of my yoga teacher, Marta Molinari Amorim, to whom I am forever grateful. The peace and calm I found at Vagafogo, in the town of Pirenópolis, were also a source of energy for continuing to work.

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Finally, I would like to thank my companion Marco Antonio Lazarin for understanding my silences and to respect my options. My gratitude to my daughter Adele for giving up much of her childhood life in order to wait for me to finish my dissertation work. I hope we can recuperate our time together.

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LIST OF ACRONYMS

ACS: Corporals and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units. *(Associação de Cabos e Soldados do Estado de Goiás)*

ARCA: Association for Environmental Recovery and Conservation

BIOSFERA: Brazilian Society for Environmental Valorization (*Sociedade Brasileira para Valorização do Meio Ambiente*)

CEPAIGO: Agro-Industry Penitentiary Center of Goiás *(Centro Penitenciário Agro-Industrial de Goiás)*

CPI: Senate Comission of Inquiry (*Comissão Parlamentar de Inquérito*)

CIPOLICE: Independent Company of Special Police and Environment Control *(Companhia Independente de Policiamento Especial e Controle Ambiental)*

CNEN: Brazilian National Nuclear Energy Comission *(Comissão Nacional de Energia Nuclear)*

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COPEL: Scrap Paper Commerce *(Comércio de Aparas de Papel)*

COPOM: Center of Military Police Operations *(Centro de Operações da Polícia Militar)*

DIN: Department of Nuclear Installations *(Departamento de Instalações e Materiais Nucleares)*

FEBEM: Minor Well-Being Goiás State Foundation *(Fundação Estadual do Bem-Estar do Menor)*

FINEP: Proposals and Studies Financing *(Financiadora de Estudos e Projetos)*

FUNLEIDE: Leide das Neves Ferreira Foundation *(Fundação Leide das Neves Ferreira)*

FURNAS: Furnas Eletric Power Company S/A *(Furnas Centrais Elétricas S/A)*

HNMD: Marcílio Dias Navy Hospital *(Hospital Naval Marcílio Dias)*

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IAEA: International Atomic Energy Agency *(Agência Internacional de Energia Atômica)*

IGR: Goiânia Institute of Radiotherapy *(Instituto Goiano de Radioterapia)*

INB: Brazilian Nuclear Industries *(Indústrias Nucleares Brasileiras)*

IPASGO: Social Welfare and Assistance Institute of Goiás State Servants *(Instituto de Previdência e Assistência dos Servidores do Estado de Goiás)*

MP's: Military Policemen *(Policiais Militares)*

NUAC: Support Nucleus of Goiânia Radiological Disaster *(Núcleo de Apoio ao Acidente Radiológico de Goiânia)*

NUCLEBRÁS: Brazilian Nuclear Enterprises S/A *(Indústrias Nucleares Brasileiras S/A)*

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OSEGO:	Goiás Health Organization *(Organização de Saúde de Goiás)*
RDPMGO:	Regiment of the Military Police of the State of Goiás *(Regimento da Polícia Militar do Estado de Goiás)*
PC do B:	Communist Party of the Brazil *(Partido Comunista do Brasil)*
PNRA:	First National Plan of Agrariam Reform *(Plano Nacional de Reforma Agrária)*
PT:	Worker's Party *(Partido dos Trabalhadores)*
SEBRAE:	Agency to Support the Micro and Small Enterprises (*Serviço de Apoio às Micro e Pequenas Empresas de Goiás)*
SULEIDE	Section Leide das Neves Ferreira (*Superintendência Leide das Neves Ferreira*)

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UDR:	National Rural Democractic Union *(União Democrática Ruralista Nacional)*
UFG:	Federal University of Goiás *(Universidade Federal de Goiás)*

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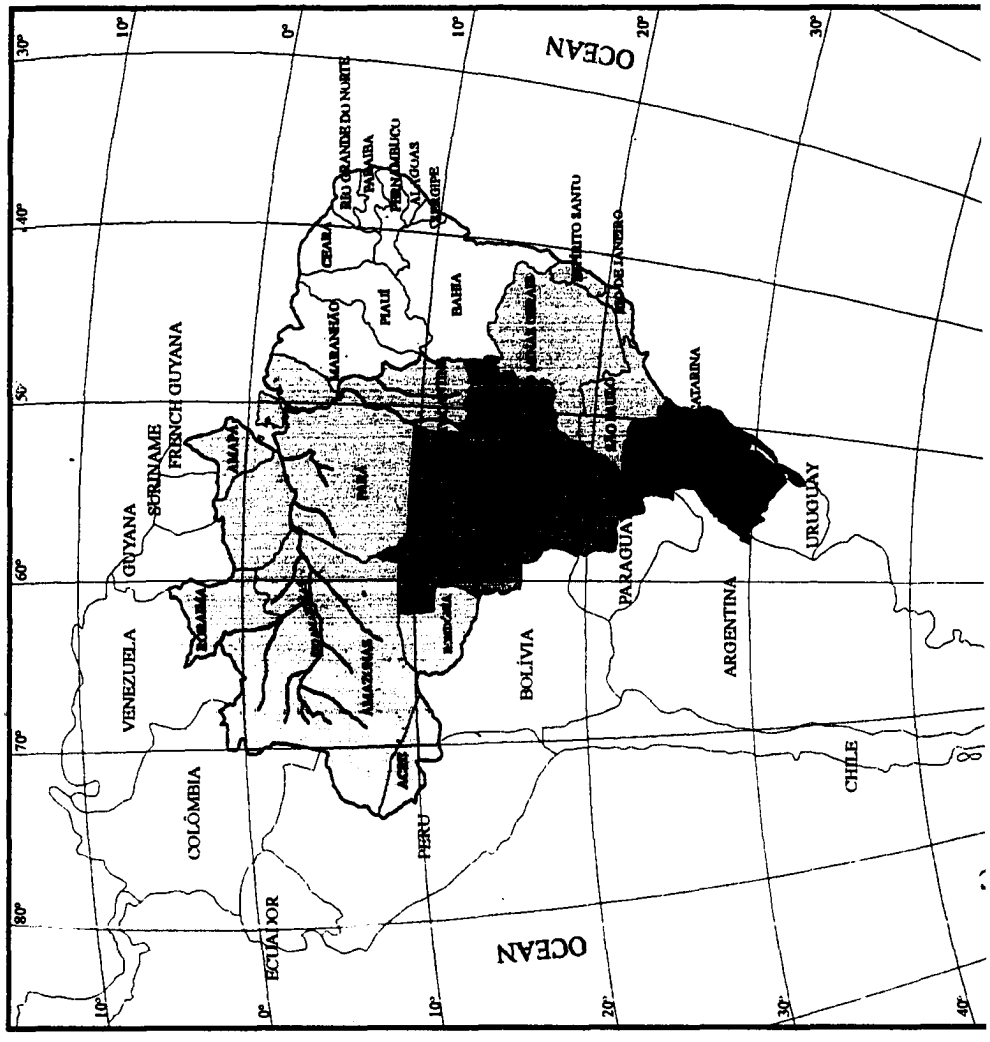
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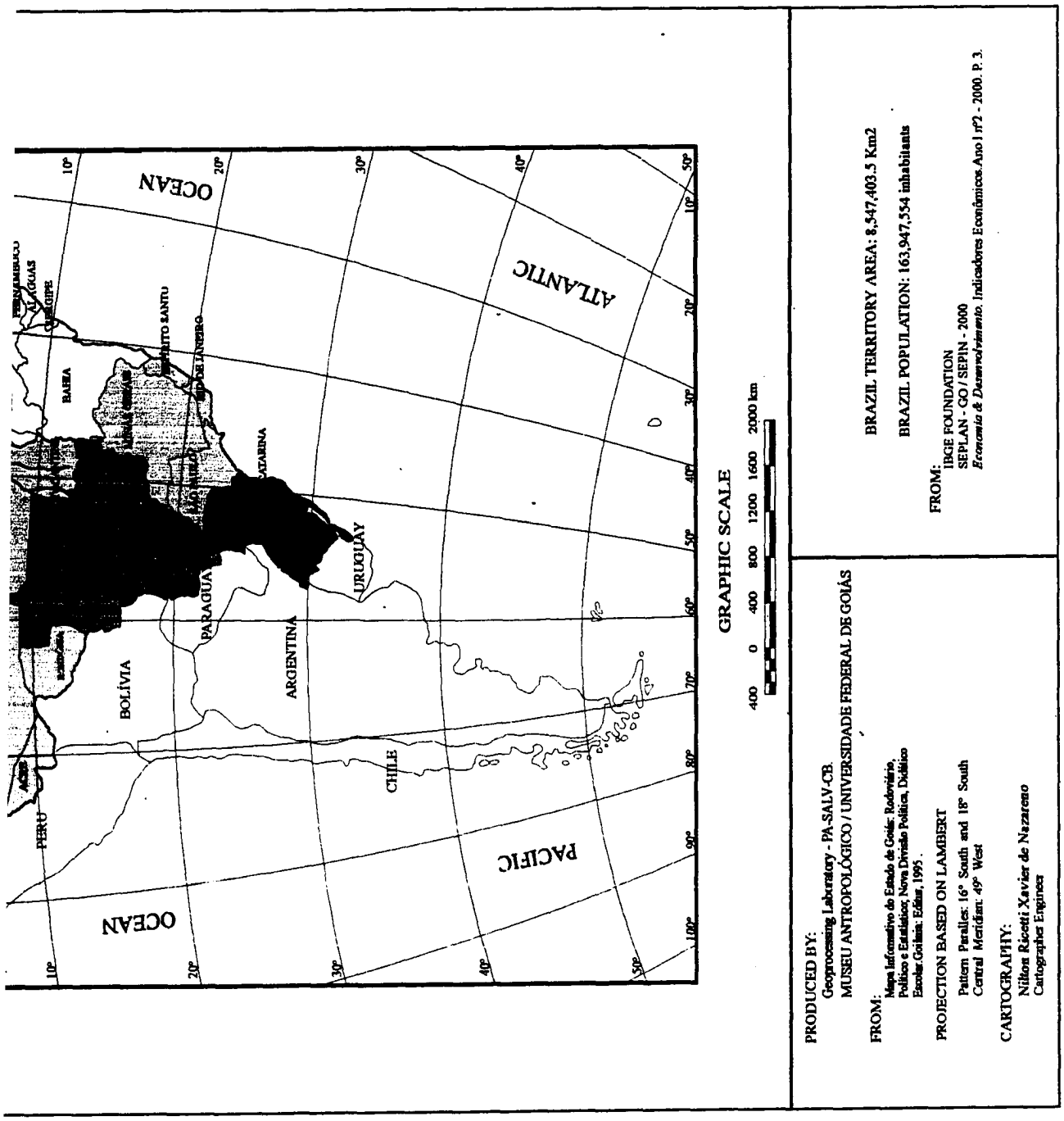
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BRAZIL
SOUTH AMERICA



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GRAPHIC SCALE

400 0 400 800 1200 1600 2000 km

BRAZIL TERRITORY AREA: 8,547,403.5 Km2

BRAZIL POPULATION: 163,947,554 inhabitants

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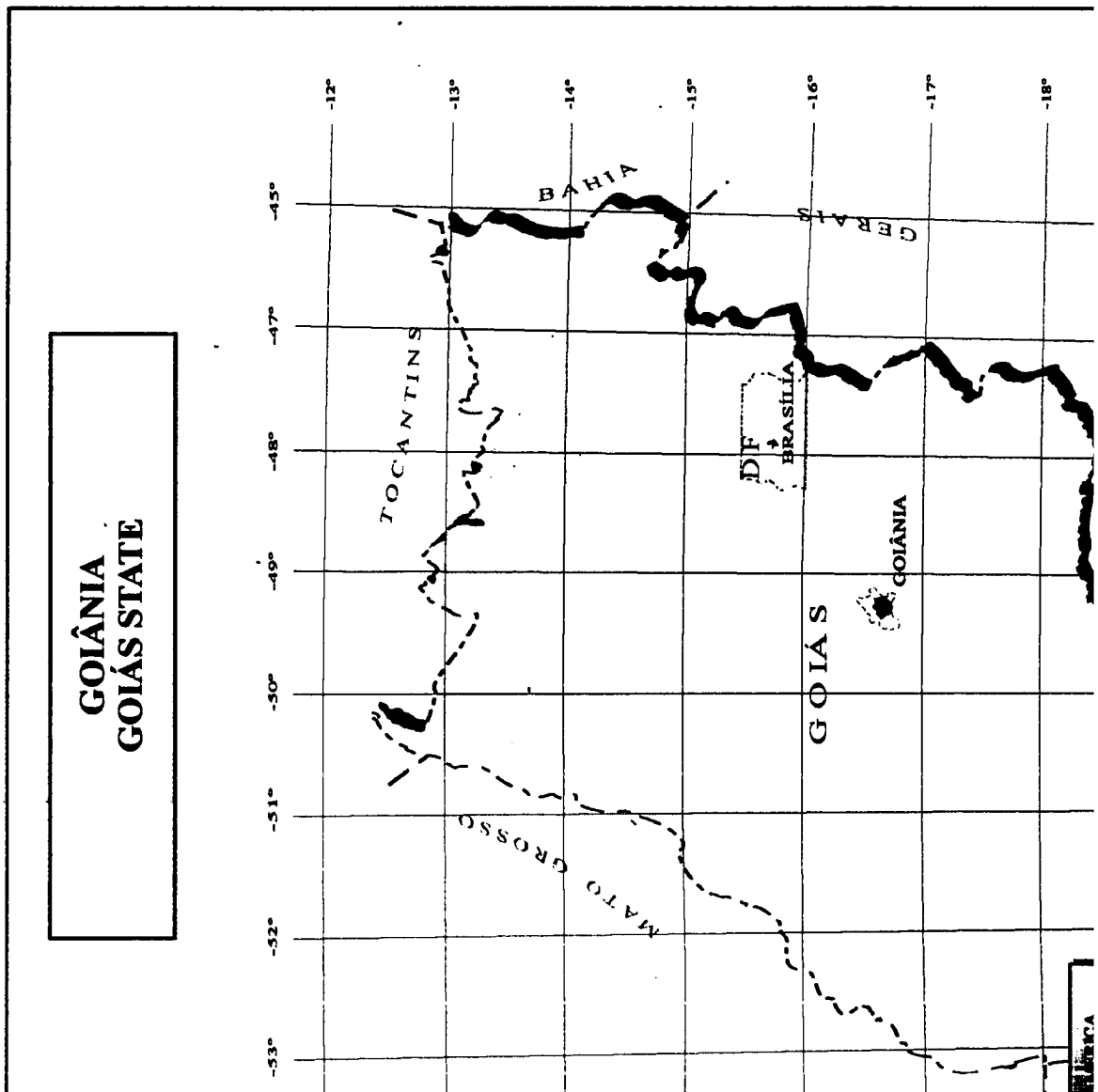
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Central Meridian: 49° West

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Cartographer Engineer

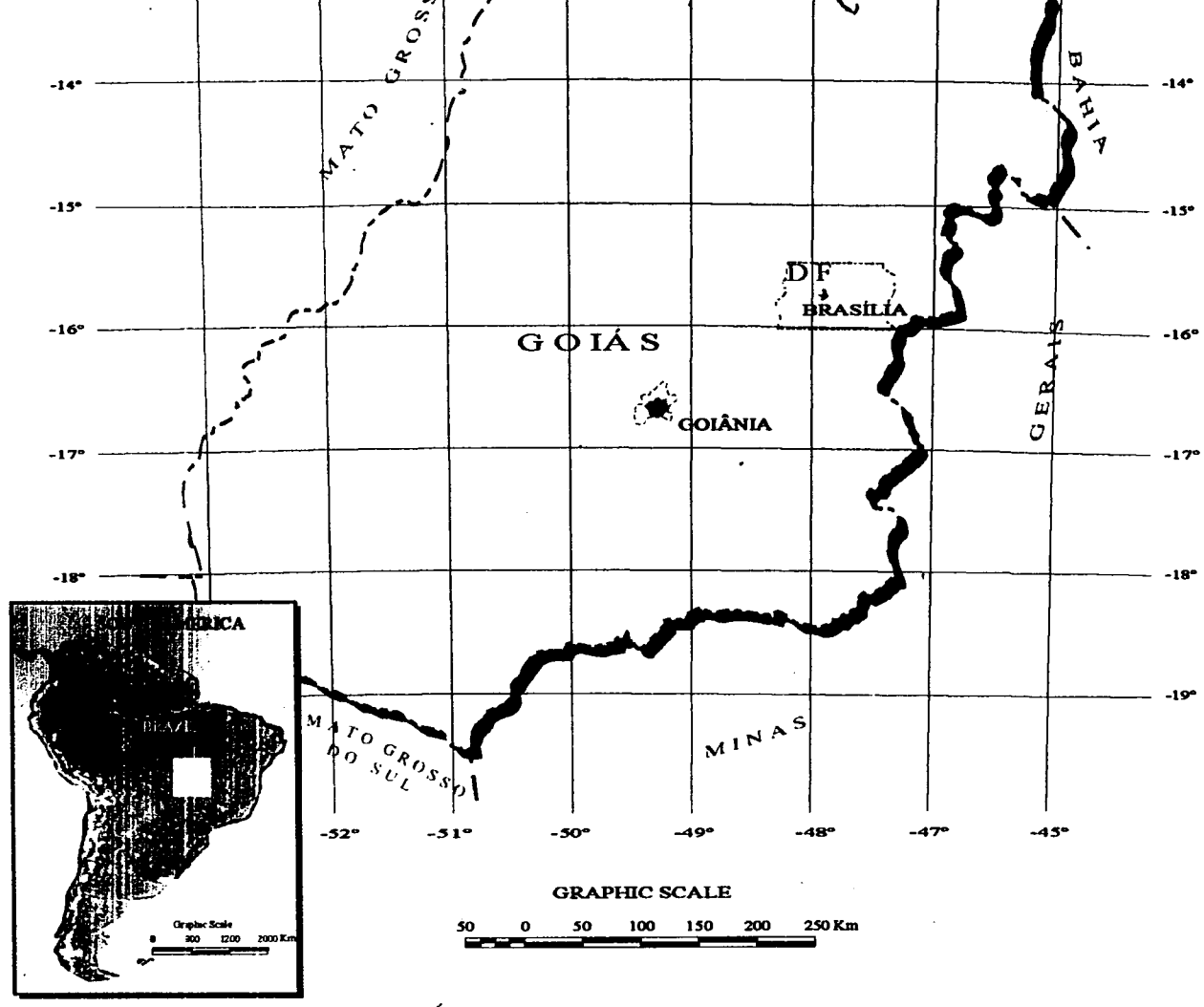
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PROJECTION BASED ON LAMBERT
Pattern Parallels : 16° South and South
Central Meridian: 49° West

CARTOGRAPHY:
Nilton Ricetti Xavier de Nazareno
Cartographer Engineer

STATE OF GOIÁS TERRITORY AREA: 341,289.5 Km²

STATE OF GOIÁS POPULATION: 4,848,725 in habitants

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GOIÂNIA TERRITORY AREA : 929 Km²

GOIÂNIA POPULATION : 1,003,477 inhabitants

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ONE
INTRODUCTION

In September 1987, in Goiânia,[1] the Goiás state capital, located on the Central Brazil plateau, an abandoned cesium-137 teletherapy unit[2] was collected by informal sector workers. They took it home and opened it. The result was severe environmental and population contamination.

Official reconstitution of the disaster and legal documents situate the disaster's origin two years earlier than the time when the teletherapy unit was collected by scavengers. In Goiânia, about the end of 1985 the owners of a private radiotherapy institute - Instituto Goiano de Radioterapia (IGR) moved the institute to new premises[3] taking with it a cobalt-60 teletherapy machine and leaving behind a cesium-137 therapy unit.[4] According to nuclear- experts, IGR's proprietors did not notify the licensing

---

1 The city of Goiânia has a population of about one million inhabitants. It is a city planned, during the 1930s, to be the regional capital. The local economy is based on cereal farms and cattle ranches. Goiânia is at 200 km from Brasília, the capital of Brazil, built during the 1960s.

2 "*The teletherapy unit in question was a model Cesapan F - 3000 designed by Barazetti and Company of Milan, Italy, in the 1950s and marketed by Generay SpA of Italy.*" (IAEA 1988: 18-19)

3 In 1985, the IGR moved from 1,587 Paranaíba Avenue to 305 1-A Street, Airport Sector.

4 Goiás police and judiciary authorities investigated the reasons why this teletherapy unit was left at the former IGR facilities. According to Goiás Justice Procurator, Sullivan Silvester, this action was related to a judicial lawsuit involving Santa

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authority, the *Comissão Nacional de Energia Nuclear* (CNEN), Brazil's national nuclear energy commission, about the abandonment of this unit (IAEA 1988:1).[5]

As time passed, complex elements increased the danger of this abandoned radioactivity unit and revealed the precariousness and inability of local institutions to handle radioactive material. In 1987, the old building where the teletherapy unit had been left, was partly demolished without any kind of surveillance. CNEN, responsible for monitoring all radioactive material in Brazilian territory had no control over the actual condition of teletherapy and radiography sources. At the same time, with the Brazilian economic crisis of the 1980s, unemployment increased, and individuals who were dependent on the informal sector multiplied. One of these was the "catador de papel," an individual who used handmade metal and cardboard strollers to collect papers and scrap metals to sell to junkyard owners. Those last ones after assembling a great amount of material finally sell it to recycling industries. Two of these scrap collectors entered the abandoned clinic, took a part of the teletherapy unit to their homes and opened it at a

---

Casa de Misericórdia Hospital (that owned the plot where was constructed the IGR building), the Instituto de Previdência do Estado de Goiás - IPASGO (health care institute for Goiás state civil service that in 1985 bought the plot from the Santa Casa Hospital) and the physician Amaurillo Monteiro de Oliveira who was the owner of the building where was installed the IGR. In fact, the Santa Casa de Misericórdia allowed him to raise the edifice in its area. (Silvestre. "A História do Acidente com o Césio-137". Newspaper *Diário da Manhã*. May 1996)

5 According to Goiás Justice Procurator, Sulivan Silvester __ who worked for four years on the disaster investigation __ and to International Atomic Energy Agency report (1988: 1), the IGR's owners and their nuclear physicist did not notify Comissão Nacional de Energia Nuclear, the licensing authority, about the abandon of this teletherapy unit. In an interview I conducted with the physician Carlos de Figueiredo Bezerril, one of the IGR proprietors, he told me that this communication was made.

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house on 57th Street, in downtown Goiânia, turning the area into a major focus of radiation. They subsequently sold the material to a scrap dealer who became fascinated with the blue glow that emanated from the unit at night.[6]

Members of the scrap dealer's family and social network were then invited to come to his house, to see and touch the powder. Among those individuals, some began to carry the physical and visible inscription of radiation on their bodies because they had, in different ways, had physical contact with the cesium-137 source. The skin burns they suffered were the result of various activities: opening the teletherapy unit; holding a radioactive piece or putting it on their bodies. For some it looked like carnival glitter and they rubbed their bodies with it. One man drew a cross on his chest, thinking that perhaps it had a magical power. Many took portions of the cesium-137 to their homes and stored it in their kitchens and bedrooms. Some ate meals with their hands contaminated with cesium. These people continued to go to work, to school, to take mass transportation, and to carry on a regular life not knowing that they were carrying radioactive material on and inside their bodies. In this way some individuals became irradiated, having no idea of the terrible consequences.

According to the official reconstruction of the events, the authorities discovered the disaster only 13 days after the beginning of the radiation dissemination. (IAEA 1988a; IAEA 1988b; Fundação Leide das Neves Ferreira 1990; Curado and Silva 1990). Particular features of the Goiânia radiation disaster made it "*the worst radiation*

---

6 The breaking down of the radiotherapy source with the rupture of its shield and capsule caused the dissemination of 19 g of radioactive material. (Mendonça: A-1; Oliveira 1988:6)

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accident in the Western Hemisphere." (Roberts 1987:238). The literature points to several elements contributing to that characterization: (a) the delay between the event and its official perception and recognition; (b) the fact that the major focus of the disaster area (Sector Aeroporto) was in a densely populated section of the city; (c) the way that people used the cesium in their daily lives; (d) the lack of an emergency plan for radiation disasters; (e) the physical characteristic of the cesium used in this teletherapy;[7] (f) the weather pattern in central Brazil in September with abundant rain, high temperatures and winds, which contributed to the dispersion of radioactivity.[8]

The nuclear and biomedical specialists who worked during the disaster emergency phase, identified two hundred and forty-nine individuals who were considered "contaminated," as contaminated as was the environment around them. In October 1987, four individuals belonging to this group died at the *Hospital Naval Marcílio Dias* (Marcílio Dias Navy Hospital) in Rio de Janeiro. They had been transferred from Goiânia to Rio de Janeiro because of their deteriorating medical condition. In the following years, three other members of this radiation-affected group died from cancer. Nevertheless, their deaths were not viewed as being caused by the radiation exposure. In

---

7 Contrary to the current use of cesium-137 vitrified form that inhibits dispersion (IAEA 1988:88) this was an obsolete teletherapy unit that contained cesium chloride salt which is highly soluble and readily dispersible.

8 The high temperature dried out the wet ground and the high winds caused the suspending and dispersion of the cesium, that was deposited on the roof tops of houses. (IAEA 1988: 70; 88)

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fact, the official memory registers only the first four causalities as a consequence of the disaster.

1. SOME WORDS ON DOING FIELDWORK AS A NATIVE ANTHROPOLOGIST

In September 1987 I was living in Goiânia. Like many other people in the city, I first heard about the disaster while watching the news on television. At first, I was unable to make sense of what I was hearing and watching. The images and the printed news reported the disaster as being limited to individuals associated with scavenger activities and the spaces where they trade, i.e. junkyards. Thus, at the beginning I felt the disaster was far way from my everyday experiences, a distance established by social, economic, cultural and physical boundaries.

In early October, some authorities recognized the situation to be worse than previously assessed, and the effects of Chernobyl were recalled. The population's initial fear was increased by contradictory and unintelligible reports made by nuclear teams and governmental authorities. The discrepancy among the official accounts of the disaster raised distrust about the work done by the nuclear experts. At the same time, discrimination against individuals and merchandise originating from Goiânia aggravated the situation (Petterson 1988:85-86). One day, as I came to work at the Universidade Federal de Goiás - UFG -, where the campus is located fifteen kilometers from downtown Goiânia, I found a chaotic situation. For one week, it was impossible to teach because students, staff and faculty were emotionally disturbed and their ordinary life was

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disrupted. From that moment on, I started to figure out that the disaster was part of my life.

My connection to the disaster was framed by two different currents: I approached and I was caught by the disaster. First, my anthropological[9] gaze turned toward the disaster, because I felt I could bring my fear under control through knowledge of it. Also, in this emergency phase, which I am now discussing, the hard sciences had the hegemony over intervention as well as understanding of the disaster and I felt that the social sciences should have a role to play. So, when the *Núcleo de Apoio ao Acidente Radiológico de Goiânia* (Support Nucleus of Goiânia Radiological Disaster)[10]- NUAC - was established at the UFG, another anthropologist Marco Antonio Larazin and I joined the team, and at the same time we delivered a text[11] urging our social science colleagues

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9 Academic interest combined with environmentalist concern and experience as an activist in the feminist movement, education labor union and left wing political party.

10 The NUAC was created by professor Joel Pimentel Ulhoa, dean of the Federal University of Goiás, on October 19, 1987 according to edict number 01086. Physics José Valter Cotegibe Pélico was chosen to be the Nucleus director. Its major aim was to promote actions in order to help the Goiânia population. Those actions included:

- monitoring individuals and environment;
- delivering basic notions related to pacific use of the radiation sources;
- doing research on the radiation effects caused by the Goiânia disaster.

11 Our document, delivered on November 12, 1987, stressed the need of adding the social sciences' perspectives to the physics, physicians and biologists approaches of the disaster. We believed that the social impacts should be assessed in order to find the appropriated forms of intervention. We tried to assembly some of the already organized UFG research centers as: Museu Antropológico (Anthropological Museum); Centro de Estudos da Cultura Popular - CECUP - (Center for the Study of Popular Culture); Centro de Documentação Histórica (Center of Historical Documentation) and the Media Center.

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to do the same. While at the NUAC, I made my first intervention in the "field". This mostly working with the *Associação das Vítimas do Césio* (Cesium Victims Association) and the "radioacidentados"[12]. This preliminary fieldwork led to a research proposal[13] not then developed under the NUAC, but which later reformulated and transformed, became my dissertation proposal.

Second, the acknowledgment of several radiation contamination sites enlarged the boundaries of the disaster beyond the seven first[14] detected hot spots.

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12 In the biomedical perspective, "radioacidentados" are those whose radiation effects were physically proved at the emergency phase of the disaster. They were patients with radiodermites and/or with significant doses of radiation. A Medical Protocol was established and the dosimetry was set up in order to assure medical monitoring program to those included in this classification (Fundação Leide das Neves. *Report of Activities. 1988*; Oliveira at al. 1987).

13 Following NUAC's aim of doing research on the radiation effects caused by the Goiânia disaster, in 1988, Marco Antonio Lazarin and I submitted to *Financiadora de Estudos e Projetos* - FINEP, a national science foundation, a joint proposal whose first title was *O Acidente de Goiânia e seus Impactos Sociais* (The Social Impacts of Goiânia Disaster) changed for *Vítimas do Césio-137- Uma Leitura Antropológica (Cesium-137 Victims: An Anthropological Approach).* The application process took three years considering the proposal submission in 1988, the notification of FINEP's decision in 1989 and, money allocation liberated on 1990. When informed by the final resolution, Mr. Lazarin had already left the project, and I refused the grant because of budgetary and bureaucratic issues along with new professional and personal compromises. Thus, this proposal was never carried out and my activities at the NUAC ended up in delivering a sort of support to the *Associação das Vítimas do Césio.* But I did not give up the idea of doing research on this subject so, when I decided to have my doctoral degree in U.S.A., I based my application on the Goiânia disaster subject.

14 Besides the seven hot spots first detected, the nuclear experts discovered others when an aerial survey was carried out by helicopter over two days (October seven and eight, 1987) This method allowed the localization of the recycling industry that received the contaminated scrap papers along with small focus on the streets where the contaminated individuals circulated. Later on, a survey by car was carried out in several other areas of the city. At all, forty- six houses localized in different cities (Aparecida de

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Contrary to the initial assessments and opposing the official announcements, the visible activities developed by the nuclear experts in the urban location pointed to a disaster not limited to particular individuals and places. As time passed, I found myself each day nearer to the disaster scenario. In fact, one day, following my ordinary itinerary, I noticed nuclear experts, dressed in white overalls, cleaning up contaminated spots all along one of the avenues[15] I used to take. Later on, I learned from the press that the garage where I took my car in late September to be repaired was found contaminated. Already astounded by this information, I was caught in another frightening episode: the car-repairing painter, with whom I had negotiated the job, was classified as one of the most radiation-exposed and contaminated persons[16]. Consequently, I took the car to be

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Goiânia, Anápolis, Inhumas); and, forty-five public spaces, as streets and sidewalks, were reported as contaminated, excluding the above mentioned seven hot spots. Considering the span of time between the event and its official perception and recognition, and the fact that high radiation exposed people undertook their everyday shopping, the nuclear experts decided for monitoring the money in circulation. Thus, 10,240,000 bills were monitored and, among them sixty-eight were found contaminated by the cesium-127 (IAEA 1988; CNEN 1987).

15 Among other contaminated areas that were part of my ordinary way, there was Santos Dumont Avenue at five different points, as enumerated by CNEN document (*Relatórios das Várias Frentes de Trabalho na Descontaminação no Acidente com o Césio 137 em Goiânia.* 1987)

16 When I met him again, during my fieldwork, we could not determine whether or not when I approached him the first time he was already carrying with him the contamination and thus irradiating the people in his proximity.

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examined and I became one of the 112.000 persons[17], according to IAEA report (1988:2), who afraid of have being affected, went to the Estádio Olímpico to be monitored by the CNEN personnel. My car was free of contamination but my apprehension has remained through the years: How distant was I from the radiation focus? Have I been at some point exposed?[18] These and other questions have permeated

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17 From September 30 to December, 1987, CNEN kept a unit at the Estádio Olímpico to monitor individuals and cars. The population was afraid and wants to assure that they were free of contamination so they looked for the service. CNEN report of 112,800 individuals being monitored at that time (CNEN 1987). This number differs of 800 persons from the IAEA's report that claims the amount of 112,000 individuals. The entire quantity must be greater than this one because individuals went also to be monitored by NUAC personnel and those were not included in the CNEN calculation. Although the difference reported on the quantity of individuals monitored, both documents maintain the same number of individuals found with contamination, which are two hundred and forty-nine persons.

The equipments used could reveal whether a person was contaminated or not by the radiation but it was incapable to show if someone has been irradiated. So, the assessment of the "real" number of individuals affected by the disaster remains unsolved.

18 The nuclear experts make a distinction between **contamination** and **exposure**. In their perspective, contamination is when an individual has physical contact with a radioactive material and this material or, part of it, is transferred to a person's body. There is internal contamination when the ingestion of radioactive material occurs by a person's mouth (eating) or nose (breathing). External contamination happens when an individual's skin carry the radioactive material. They understand exposure when an individual is nearby a radiation source but does not have the material in his/her body. Individuals' doses of exposure are calculated based on the amount of time spent near the source and the power of the specific source. In the case of Goiânia, *"Some suffered very high internal and external contamination owing to the way they had handled the caesium chloride powder, such as daubing their skin and eating with contaminated hands, and via contamination of building, furnishings, fitting and utensils."* (IAEA 1988:2) Before passing by the decontamination process, those contaminated individuals were also source of radiation to themselves and to other ones.

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also the minds of many other Goiânia inhabitants in the aftermath of the disaster. Usually they do not surface in the public arena but are frequently whispered in small groups.[19]

These personal recollections of the disaster based on particular experience and on preliminary fieldwork[20] point to some empirical and emotional aspects of my research that are of theoretical and methodological significance. First of all, since the beginning I was deeply touched by the impact of the disaster. Attentive to the anthropological concern with the alterity[21] and its problematization in cases of a native anthropologist, I took advantage of the time spent on my doctoral course work, from 1992 to 1995 in the United States, to distance myself both intellectually and emotionally from my subject. Thus when I returned to Goiânia for fieldwork research from 1996 to 1997, I could reframe my personal bond with the disaster.

Nevertheless, due to the sensitivity of this theme, once in the field the emotions that I supposed I have controlled through the amount of time which separated me from my lived experiences of the traumatic event surfaced. The feelings I felt came

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19 In Goiânia, in the past years, each time I made a speech or referred to my dissertation subject in my classes there was always someone who wanted to demonstrate his/her association with the disaster.

20 My preliminary fieldwork was done at different moments during the years of 1987- 1989.

21 In the case of Brazilian anthropologists working in their own cities I call attention to Da Matta (1981) and Velho's (1981) debate on the distinction between familiarity with and the knowledge of a particular socio-cultural fait.

In this context, the historical review of Brazilian Anthropology made by Peirano (1999) problematizes the alterity (ies) the Brazilian anthropologist established with their "subjects" when doing fieldwork within their own societies.

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from the topic itself, but it was mostly a consequence of the singular way in which anthropologists relate to theirs subjects[22] and engage themselves in the lived experiences of the people with whom they work with. As consequence, there is a particular modality in which anthropological texts can receive and translate the painful narratives of individuals' experience of trauma. In this way, my anthropological text is not only a discourse through which survivors found a away to express and turn public their pains, but it also embodies grief.[23] Collecting life histories and following the everyday life of some of the impacted individuals were at some moments very painful. During my fieldwork, I noticed that my emotional distress was the same as that felt by some professionals who have worked with the "radioacidentados"[24]. When in the process of interviewing them, I had to turn off the tape recorder because of their outbursts of crying while remembering[25]. Remaining in Goiânia after completing the data collection phase,

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22 I am referring to the classical Malinowskian methodological approach of participant observation and to the immersion anthropologists undertook in the lives of the groups with whom they work with when doing theirs field research.

23 Good claims that narratives have a complex relationship to experience not only for those who recall and tell the occurrences but also to anthropologists interested in the study of experience. As he wrote: *"We understand the experience of others in some measure by the experiences provoked in us when we hear such stories, experiences which are affective, sensual, and embodied"* (Good 1994:139-140).

24 The physicians attending the victims, at the first moment of the emergency, claim also that they suffered large emotional impact (Brandão-Mello 1991; Brandão-Mello at al. 1991).

25 The process of talking about the disaster during the interview process had a cathartic effect on many of those professionals with whom I had conducted interviews. Carvalho's work on the psychological effects of the disaster on its emergency responders pointed out to this cathartic effect that occurred when she was conducting interviews, as she claims:

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I concluded that it was again necessary for me to distance myself from my subject in order to analyze my data, including the examination of my feelings. My approach was to cut off personal contacts with institutions and individuals directly involved with the disaster and, to distance myself in time from the fieldwork experience. Thus, my dissertation writing process started in midyear 2000.

A second point raised during my preliminary contact with the disaster was the need to understand it through different voices. The interpretations and experiences were perceived differently according to the social actor involved. While the official account suggested a disaster localized in precise time and space and limited to a group of individuals, my observations indicated the continued presence of the disaster in its aftermath and signaled a broader impact in terms of human beings and the urban area. Thus, along with published and unpublished reports from a myriad of professional perspectives, newspaper and broadcast news, academic papers and, reports from Goiânia Town Council, Legislative Assembly of the State of Goiás, Brazilian Congress and Senate [26], I listened to and followed daily the activities of professionals who had worked

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"The subject were asked to talk freely about their experiences during the accident. These interviews had no time limit, and they had a cathartic effect on many of the people interviewed. Those interviewed displayed much emotion and an intense need to speak about their experience" (1991:132).

26 I did the data collecting at archives localized at different cities:

1. At Goiânia: Center of Documentation and Information of the Fundação Leide das Neves Ferreira - FUNLEIDE; Central Archive of the Universidade Federal de Goiás; Goiás State Congress; Goiânia City Council; Serra Dourada TV Network; Corporals and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units - ACS; Instituto Brasil Central - IBRACE; and, at the Documentation Section of the Comissão Nacional de Energia Nuclear - CNEN - at 57 th Street);

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at the disaster scene as well as those individuals considered affected by it. I addressed my focus to the interstitial spaces where everyday interpersonal relationships and communications took place and through which the institutions, associations or legal agents operate (Nadel 1956). I understood that this approach would give me a picture of the field of forces (Wolf 1990 [1982]: 387) within which the narratives and memories of the disaster were produced and also the context that informed individuals' actions.

As a consequence, my analysis is supported by data originating from diverse perspectives: (1) "radioacidentados"; (2) members of the Associação das Vítimas do Césio-137; (3) the self-identified "indirect victims"; (4) neighbors of the 1987 hot spots; (5) patients, administrators, social workers and health team (i.e., psychologists, physicians, dentists) from the Fundação Leide das Neves Ferreira [27]; (6) Brazilian nuclear experts team (i.e., physics, physicians, biologists, nuclear engineers, radiological protection personnel, staff) originated from institutions as *Empresas Nucleares Brasileiras* - NUCLEBRAS (Brazilian Nuclear Enterprises)[28], *Furnas Centrais Elétricas*

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2. At Abadia de Goiás: Information Center of the Nuclear Sciences Regional Center- CNEN;

3. At Brasília: National Congress;

4: At Rio de Janeiro: Comissão Nacional de Energia Nuclear;

I collected data also at private archives from professionals that worked on the disaster emergency phase and at those belonging to affected individuals.

27 Leide das Neves Foundation - FUNLEIDE - which name is a homage to a six-years old child, one of the fatal disaster victim was created, in February 1988, by Goiás government to deliver assistance to disaster patients.

28 Due to Goiânia Disaster, the federal government promoted some changes

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(Furnas Electric Power Company S/A), *Comissão Nacional de Energia Nuclear* - CNEN and Marcílio Dias Navy Hospital; (7) staff of the *Núcleo de Acompanhamento do Acidente Radiológico de Goiânia* (Support Nucleus of Goiânia Radiological Disaster)- NUAC - (8) member of the environmental organization *Associação para Recuperação e Conservação do Ambiente* - ARCA (Association for Environmental Recovery and Conservation); (9) academics; (10) journalists; (11) writers; (12) movie stars; (13) politicians, (14) public service personnel; (15) policemen; and, (16) activists who were involved with the disaster. Therefore, the polyphonic strategy (Bakhtin 1981; Clifford 1983; 1986) I use in the dissertation writing is not a mere literary artifice but an outcome of the own disaster experience that grapples with and enacts heteroglossia.

The third point suggested during preliminary data collecting in late eighties, was the perpetuation of the disaster beyond the 1987 events, as previous mentioned. Concerned with this idea of a "disaster in process", my investigation examines the disaster through the period of ten years that is from 1987 to 1997. Some events that occurred during the year of 1997 corroborated to support my claim of a disaster perpetuation. Among them, I highlight the struggle undertaken by policemen to establish a nexus between their 90's unexplainable illnesses and the work they executed in 1987/1988 at radiation affected areas. To reinforce the assumption of the prevailing impact of the disaster effects on those who survive it, I choose to start my analysis from

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in the Brazilian nuclear institutions. Thus, the Brazilian President, at that time, José Sarney, signed the Law number 2,464 / 1988 moving NUCLEBRAS into INB (*Brazilian Nuclear Industries*) - Indústrias Nucleares Brasileiras S/A (Oliveira 1989:18).

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the 1997 events and, with the policemen's voices. Then, I use the flashback procedure to connect them with the past and with other survivors' narratives and experiences.

2. ANTHROPOLOGICAL PERSPECTIVE ON DISASTER

The current anthropological conceptualization of disaster and its application to the analysis of catastrophic events traces its roots to the mid XX century and the study of disasters has become an important focus for Anthropological research. In order to better understand this notion and before my argumentation of the 1987 Goiânia tragedy as a disaster, I will present an overview of the social science literature on disaster and on radiation.

2.1. An Overview of the Social Science Literature on Disaster

Since the 50's, American scholars have shown concern with the topic of disaster, as illustrated by the special issue of *Human Organization* (1957), called "Human Adaptation to Disaster", which includes an annotated bibliography (Rayner 1957), suggesting an interest in the consolidation of this subject. In 1957, the Society for Applied Anthropology had already held three symposia on this issue, one in 1953 and two others in 1955 (Demerath and Wallace 1957). The major interest was in understanding change and human adaptation in disaster situations, although David Schneider's study of Typhoons on Yap (Micronesia) focused on the typhoon as a "chronic threat", and concluded that the most significant response is not to the physical impact at all, but rather to the impact of the meanings with which it is invested (1957:14). His

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concern is the cultural meaning of a natural phenomenon, its representation in terms of social relations, and the impact of those culturally constructed meanings on Yap society (Id: 13).

The institutionalization of this topic has been accomplished, in the United States, through: a) the creation, during the 50's, of a National Research Council Committee on Disaster Studies which nominated a specific research team to conduct investigations of domestic disasters *(Human Organization*: 6); b) the establishment of the Disaster Research Center (DRC) at the Ohio State University in 1963, which was transferred, in 1984, to the University of Delaware (Quarantelli 1991: 274), where a specialized library contains more than 30,000 items on the social and behavioral aspects of the disasters; c) the organization of specific meetings and panels within major scientific associations; d) the foundation of special publications such as the journal *Disasters.* Increasing interest in the topic inside the field of Anthropology has been attested by Anthony Oliver-Smith's Literature Review in the *Annual Reviews of Anthropology* (1996).

A brief survey of the literature produced from 1950 to the mid 90`s suggests a major concern with events like earthquakes, hurricanes, tornados, hazardous chemical incidents, explosions, forest fires, plane crashes, erosion episodes, dam breaks, massive blizzards and finally, and recently, with the theme of radiation. The issues raised include preparations for and responses to major community disasters, delivery of emergency medical services, study of community disaster recovery, blame and hostility and the role of the media in this context, in addition to post-traumatic stress disorders

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(PTSD). Some scholars attempted to categorize the different disasters and to define the pattern of victims (Taylor 1990, Oliver-Smith 1992). These two researchers agree that the word "disaster" has many connotations and definitions and that the term refers alternatively to the "agent", and to the impact or the evaluation of the impact. Oliver-Smith (Id.13) argues that disasters involve two elements: a natural (or man-made) phenomenon and a human population. He claims that a) because of their environment some populations are at greater risk than others; b) the disaster damages or destroys society's ability to provide for the needs of its members, so new adjustments have to be formulated for the society to continue functioning as an entity.

A number of disasters, such as the Bhopal tragedy (the 1984 gas leak at a small pesticide plant in central India owned by a subsidiary of Union Carbide Corporation) and The Exxon Valdez Oil Spill in Alaska drew the attention of investigators. Some now classical works have been used to illustrate the researchers' commitment to their subjects. Kai T. Erikson's *Everything in Its Path* (1976), is a report (authors' words) of the 1972 destruction of the community in the Buffalo Creek flood (in the Appalachians of West Virginia). Erikson gave a historical description of the socio-environmental impact of coal mining on the lives of those mountain people in early twentieth century, and how environmental degradation was related to the disaster. Making use of survivors' narratives, the author reports the emotional disorders suffered by those individuals. In Oliver-Smith' s *The Martyred City* (1992 [1986]), the author delivers an ethnographic account of a massive earthquake that struck the city of Yungay, Peru, on May 31, 1970. Oliver-Smith's major concern is the examination of the processes

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of reconstruction of the material, social, and psychological life that enable people to recover from major losses of family, community, and culture. Adeline G. Levine's *Love Canal* (1982) is an exemplary case study of the efforts of citizens in the Love Canal area of Niagara Falls to secure the resources they needed to escape homes poisoned by chemical wastes. The author makes a detailed description of the women's involvement in the community struggle against the official accounts of an environment hazardous to health.

In the field of anthropology, two major issues have been discussed within the context of disaster and hazardous environments. One is that of resettlement and post-disaster urban reconstruction. Following on this path, Low (1988) compares two approaches to the provision of resettlement housing in 1980, near Guatemala City, for a community affected by the 1976 earthquake. She focuses on the history, social organization, physical improvement, and social change related to each housing program. Oliver-Smith (1990) is concerned with the social dimensions of housing reconstruction after disaster in the context of the long-term effects of the Yungay, Peru earthquake-avalanche of 1970. Oliver-Smith (1991) pursues this issue, comparing case material from Turkey, Iran and Peru, and argues that site, layout, housing and popular input are crucial in determining success or failure in post-disaster resettlement.

The second major anthropological interest in this area has to do with community organization. Nash and Kirsch (1988) examine the rise of multiple subject voices (agents of a corporation, the medical and scientific professions, and the community) concerning the effects of polychlorinated biphenyls (PCBs) in the General

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Electric plant in Pittsfield (Massachusetts), in the late seventies. They concluded that the construction of consensus among these different discourses resulted from the ability of the corporation to set the direction of the discourse, subsuming the community's own discourse under its own (Id: 170). Susser's research on the impact of pollution generated by an U.S. industrial plant, Union Carbide Grafito, Inc, on the lives of inhabitants of a Puerto Rico town, has generated two interesting essays. In the first (1985), the author describes how health concerns and behaviors were related to historical experiences, and to political and economic interests. In the second (1992), Susser documents the continuity in gender roles that led women to community concerns and examines the combination of changes that propelled women into leadership by the end of the 1980's. Both Nash and Susser focus on the movement of transnational corporations, their environmental impact and the process of community empowerment through organization. They make an important contribution to the study of disaster by showing how issues of urban pollution, occupational and environmental health hazards change in response to ongoing conflicts among workers, management, and the communities affected.

In sum, these studies add to the disaster literature the concern with space (Low; Oliver-Smith) resulting from urban conflict, and with the notions of illness and health (Nash; Susser) as social constructs. In this way, Nash and Susser integrate the topic of disaster with studies in medical anthropology, gender, and transnationalism, pointing to power, class relations and work experience.

After the 90's, the works published in this topic show a change in the

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focus of research. The issues of the so-called "technological" disaster gained additional attention and there is an emerging interest as well, in the refugees of wars (Mills 2001; MacDonald (2001), the discussion of the themes such as memory (Mills 2001; Da Silva 2001) and trauma[29] (Stein 2001). Using a variety of natural and technological disasters, including Mexican earthquakes, drought in the Andes and in Africa, the nuclear meltdown at Chernobyl, the Exxon Valdez oil spill, the Oakland firestorm, and the Bophal gas disaster, Oliver-Smith and Hoffman's last book (2002) explore the potential of disaster for ecological, political-economic, and cultural approaches to anthropology along with the perspectives of archeology and history. They also discuss the connection between theory and practice and what anthropology can do for disaster management.

2.2. An Overview of the Social Science Literature on Radiation

The introduction of nuclear technology in the mid twentieth-century and the health, environmental and political consequences of the United States bombing of Hiroshima and Nagasaki (August 1945) opened a new field of research and a new agenda for activism and advocacy, which will reflect in the social science literatures on disaster only in late eighties. From this context the studies concerned with the conceptualization of a new disease, which some call "radiation illness", and with the health condition of workers manipulating radioactive material emerged. Also, studies adopting a historical perspective demonstrated that humans had been exposed to the damage of radiation long before the catastrophe of the World War II. Claudia Clark

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29 I will redirect my future research to this topic.

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(1987) provides evidence of teenage girls and young women who, during World War I, were poisoned by radiation while applying luminous paint containing radium to watches. They were among the first industrial radiation victims in the United States.

Historical events, such as the peace movements (60's), the community environmental health activism in the U.S. (70's), a series of "no secret" catastrophes involving the radiation fallout of Three Mile Islands (1979) and Chernobyl (1986) and the end of the Cold War (80's) contributed to the building of an important literature on the topic. And what is also significant, community political pressure and research contributed to the disclosure of secret radiation disasters and experiments, providing for a better understanding of this complex issue and advancing actions for victims' compensation. Louise Kaplan (1992), for instance, describes the complexity of events involving a community organization (the Hanford Education Action League) in the struggle involving the health effects of radiation from the Hanford Nuclear Reservation operations in Washington. As result of this movement, the United States department of Energy released the Hanford Historical Documents (1986) which revealed that the Hanford facility had exposed the public and the nuclear industry workers to radiation which had leacked to the air, soil, and water over a period of more than forty years. Recent interest in the "secrecy" of nuclear experiments, revealed the use of human guinea pigs in U.S. laboratories, such as the use in the 1960's of cancer patients at a small clinic linked with the Oak Ridge National Laboratory in Tennessee. Their patients may have received unnecessary doses of gamma rays in an experiment aimed at learning just how much radiation astronauts could tolerate before becoming sick (Marshall 1981).

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An overview of the general literature on radiation reveals the researchers' concern with some particular sites: a) Disaster in Nuclear Facilities (Three Miles Islands, U.S.A.; Chernobyl, former Soviet Union; Nuclear Weapons Facility - Air Force Base, Riverside, U.S.A., late 1950's; Hanford Nuclear Weapons Facility, Washington; Mayak Chemical Combine, former Soviet Union, 50's); b) Atomic Bomb Tests (During the 40's and 50's over the Marshall Islands, Micronesia, Pacific; Early 50's Britains' Pacific nuclear program in Australia; French Nuclear testing in Eastern Polynesia; During the 60's over Norway; During the 50's over Utah, Nevada and Arizona, U.S.A.); c) Uranium Mining (Navajo in Arizona, New Mexico and Utah, U.S.A. in the late 1940s and early 1980s). While there is an emerging concern with the study of the nuclear lab and nuclear plant, (Gusterson 1996; Zonabend 1993 [1989]; and Silva 1999) there is no study, to my knowledge, focusing any on disaster involving the medical application of the new nuclear technology.

Recent anthropological interest demonstrates an increasing concern with the human impact of radiation and on the population's response to it. Some scholars adopt a historical and political perspective stressing the relationship between the local effects of radiation and the global forces that produce it. Glenn Alcalay (1988, 1991, 1992, 1993, 1995) a long-time activist against the Post-war nuclear tests in the Pacific, both by the U.S.A. ("Operation Crossroads" on Micronesia) and France (on the French Polynesia), underlines the use of native people for experiment, a form of nuclear colonialism in the Pacific, and the forced dislocation of the Marshall Island people from their ancestral atoll creating "nuclear nomads" (1991:96). Alcalay's concern with the

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health anomalies reported by the Marshall Island inhabitants directed him to an independent survey of women and reproduction. He concluded that the strong correlation between the incidence of congenital anomalies and the distance from the Bikini area may have policy implications in terms of compensation and health care. The topic of reproduction and radiation is part of Sharon Stephens' study of the Sami community in Post-Chernobyl Norway (1995). The Sami are reindeer herders, whose life style received a great impact with the high cesium contamination of the lichen, the main winter forage of reindeer. Stephens argues that for some Sami societies the consumption of meat from family herds pastured in family territories is central to a substantialized notion of kinship, physicalized memories of the past, and the social construction of bodies (Id.: 272). State intervention on the everyday herding, and consumption practices of contaminated meat are thus perceived as threats to Sami ways of producing and reproducing persons and communities. The author also suggests that the state constructions and international scientific assessments of Chernobyl are just as cultural as Sami local representations. She claims that the historical, political and cultural differentiations among the Sami themselves point to different responses to the Chernobyl impact.

The concern with health is also a major point of two other studies. Garb's (1994) research on the Mayak Chemical Combine (former Soviet Union), whose radiation fallout of the 50's was publicly acknowledged only in 1989, illustrates the differing perceptions of how people's health and lifestyles were affected by radiation, who they blame, and what strategies they have devised to improve their condition. The author shows, for instance, that the Muslim relationship to water in their traditional habits

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of hygiene contributed to the higher exposure of women to contaminated river water. Alcalay, Stephens and Garb all underline the importance of understanding the effects of radiation and people's response to it as an uneven experience of: gender, religion, culture, politics and ethnic identity. Another important category is raised in Dawson and Madsen's work (1993) with American Indian uranium milling. They argue that occupational disease is an issue to be discussed on the topic of health and radiation. Their research also points to the importance of looking at ethnic diversity and national politics toward minorities groups within the nation state. The workplace is the site of Zonabend's (1993 [1989]) research on a nuclear reprocessing plant at la Hague (Normandy - France). From a symbolic approach, the author describes the hierarchies and the division of work inside the nuclear workplace, the relationship between village inhabitants and immigrant workers, and the impact of the nuclear facility on the local landscape. The author illustrates the construction of the idea of the nuclear plant as a "safe place" through the analysis of the work practices and the workers' language. Singer and Baer (1995) adopt a political economy approach, or what they call "partisan participation", to analyze the state regulation of hazardous industries by considering the relationship between the Nuclear Regulatory Commission (NRC) and the Kerr-McGee Corporation, in the U.S.A. They conclude that NRC functions not as a neutral arbiter of class conflict but as an ally of the nuclear industry.

Anthropological studies of radiation also discuss the significance of memory in the understanding of the radiation disasters and their socio-political and cultural implications. Yoneyma's (1993) ethnography in Hiroshima, for example, shows

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how a catastrophic event is mediated by diverse narratives of memory, and how "Hiroshima" has become a site of struggle over various historical representations. The use of narrative and life history in reconstructing catastrophic experience with radiation have been a methodological option for many social scientists, since Robert Jay Lifton's *Death in Life: Survivors of Hiroshima* (1967). In 1993, Gallangher adds visual testimony to the health effects of radiation, integrating life history with pictures taken from the workers of the United States Nevada Test Site and their families. Narratives have been also used as political, therapeutic and legal testimonies by individuals exposed to radiation disasters.

Two recurrent ideas emerged from this review of the radiation literature. First, an emphasis on the radiation as an invisible event. Behler's study of Three Miles Islands suggests that the "invisibility" led to much higher levels of uncertainty among local residents, regarding the true nature and ultimate consequences of the emergency than it would most likely have been the case with such emergencies as floods, fires, or hurricanes (1986:148). Gould's (1990) account of the spread of the Chernobyl radiation cloud over Europe discusses the technical transformation of the invisible danger to a number on a scale that we can read. While the measurements and experiments by physicists provided data considered as very precise, their scientific interpretations were perceived as inaccurate and for that reason they were challenged. Beck (1987) uses the idea of an "invisible event" in his article on the fallout from Chernobyl in Europe to point to the increasing appropriation of our senses by technical experts and the collapse of everyday knowledge in a modern "risk society". This idea of dangers that remain

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invisible to our everyday senses is present in Stephens' discussion of Sami' representations of a world that split itself into visible realities and invisible dangers (1995: 276) and also in Beck's claim that, in addition to the disempowerment of our senses, the atomic danger transcends the boundaries of space, time, and social differentiation. Beck argues that the nuclear risk is unselective, global, and knows none of the distinctions of our contemporary world of communists and capitalists, women and men, poor and rich, and the opposition between cultures, nations, and military blocs (1987:159). I do agree with Beck's assumption that the invisibility of radiation deprives our senses but I do not agree that it also deconstructs social distinctions or the reality of this invisible event. As some anthropological accounts have shown, people are differently exposed according to their gender, class, religion, ethnic identity and culture. Paine's study of the Sami in post Chernobyl disaster (1989) also highlights the conflicting production of knowledge between "the experts" and "the practitioners", in the management of reindeers contaminated by radiation, as he focused on the political implications of giving visibility to the disaster.

The second recurrent idea in the literature on radiation disaster is the debate over a more inclusive understanding of the effects of the radiation on individual lives which are not contemplated by the "radiation sickness" definition. The studies claim the need to go beyond the immediate symptoms of exposure, i.e., nausea, diarrhea, vomiting, lost of hair, skin burn. Along with the concern with future physiological effects such as cancer, infertility, and an accelerated aging process, the studies point to a definition which would include the social and psychological aspects of the distress that

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impacts the radiation-affected individual. According to the Committee for the Compilation of Material on Damage Caused by the Atomic Bombings in Hiroshima and Nagasaki:

> *"A bomb damage, then, is so complex and extensive that it cannot be reduced to any single characteristic or problem. It must be seen overall, as an interrelated array - massive physical and human loss, social disintegration, and psychological and spiritual shock that affects all life and society. Only then can one grasp the seriousness of its total impact on the biological systems that sustain life and health, on the biological systems that enable people to live together, and on the mental functions that hold these two dimensions in integrated unity. The essence of atomic destruction lies in the totality of its impact on man* [sic] *and society and on all the systems that affect their mutual continuation."*
> (quoted in Alcalay 1993: 10).

Lifton (1967) illustrates this debate over the conceptualization of radiation as a disease. He focuses on the Hiroshima case and on the physicians' controversy in defining what the "A Bomb disease" is. Some were concerned with the immediate bodily disruption, others made use of the broader issues involving psychological and social disorders.

Anthropological perspectives on radiation disaster have stressed the polysemic meaning of "radiation illness", and pointed to the local context and cultural elements which have corroborated to frame the notion in each particular case. In the Marshall Islands, "radiation illness" includes women's reproductive disorders and forced migration; for the Sami (Stephens 1995; Paine (1987, 1989) it implies ethnic identity, social, cultural and biological reproduction; for Native Americans (Churchill and LaDuke 1987) it means radioactive colonization. Garb's (1994) study shows that when local people learned that the river was "dirty", i.e. polluted by the radiation, they started to use the term "river disease," ("Muslyumvo Syndrome" according to an independent health

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researcher) to talk about the constant headaches, bleeding nose and gums, fatigue, and death. They also used this term to explain the increasing numbers of children that are lethargic and slow learners. But the "river disease" is also related to the changing of everyday activities and traditional behavior of Muslim women, to the change of diet and to men's high consumption of vodka (Id: 16).

Those studies underline the reality of the physiological damage of radiation. But they also emphasize that "radiation illness" is a socio-cultural and political construct. Following the Goiânia disaster, the multiple narratives and practices that emerged provide an opportunity to look at the polysemic feature of the "radiation illness", leading to a deeper understanding of peoples' perception of the impact of radiation in their lives.

2.3. The Anthropological Contributions to the Understanding of Disasters

The anthropological approaches to disasters which are based on ethnographic fieldwork, use of narratives, long-term perspective and in-depht fieldwork brought a new perception to these events. Current studies reject the old distinction made between "natural" versus "man-made" or "technological" disasters because they claim that at the end the "natural catastrophes" result from the human-environment relations (Oliver-Smith 1999: 74; Hewitt 1983:25). According to Oliver-Smith (1999:74): "(...) *the new perspective recasts the relationship between natural hazards and their socioeconomic context, seriously questionning the entire set of human-environment*

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relations in which disasters are seen as unhappy accidents that occur in the otherwise "normal" everyday existence."

The focus of the analysis has changed from the event to the historical processes that shaped these phenomena. Along with the examination of the "moment" __ the specific point __ the clímax of the event and its emergency phase, contemporary researches focus on the process which gave rise to the tragedy and its subsequent consequences. Current studies go beyond what was done a decade ago and move into a new terrain with the discussion of vulnerability. These viewpoints disclose the distinction among the different social actors who are involved in a particular catastrophe and raise the issue of social vulnerability based on age, gender, social class, language, religion, ethnicity and professional identity, among others. As result, disasters are perceived from various and usually divergent narratives which make significant contribution to the understanding of the victimhood identity and turn into an major support for a human rights agenda. The struggle over interpretations has also been pointed out as the bureaucratic, scientific and judicial appropriation of suffering, as illustrated by Das in the Bophal case (1998:140).

2.4. The Perception of the 1987 Goiânia Catastrophe as a Disaster

My anthropological understanding of this phenomenon as a process, having multiple interpretations, contrasts with existing statements of disaster closure and points to different conceptualizations arising from the general literature on this subject of "disaster" and "accident". From the nuclear and biomedical perspectives, this event is

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called an accident, with its focus on the doses of radiation fallout, and on the control and physical decontamination of individuals and places. The scientific investigation is based upon the doses defined and measures undertaken when the event occurred and/or was detected. The concern and study of long-term genetic effects thus stem from the mathematical definition set up at the time of the emergency and on the level the contaminated individual or site reached on the experts' scale.[30] The international acknowledgment of an event as a radiation accident is made upon the consideration of a predefined scale. In fact, the measure of the environment and individuals affected should match the international nuclear event scale defined by the International Atomic Energy Agency (IAEA 1991), which establishes the level and the criteria for the categorization of the phenomenon.[31] Thus, the severity of the event determines its classification as an incident or as an accident, and the nuclear and biomedical literatures do not include the notion of disaster. As a result, the event is perceived as being localized in precise time,

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30 As for instance, in Goiânia case, besides the fact that the nuclear and biomedical experts considered two hundred and forty-nine individuals as radiation contaminated, the nuclear experts addressed their "scientific" attention only to the twenty people who were hospitalized in 1987. As a result, the acknowledgement of significance of the official victims and the physicians is related to the estimated level of patients' contamination. The FUNLEIDE's physicians, from Goiás, are supposed to deliver day-to-day medical care to the "common" official victims while the physicians associated to nuclear agencies, from Rio de Janeiro, focus on radiation patients that received "significant doses" and thus are of "scientific interest".

31 CNEN defines disaster as: " (...) unexpected and significant change on the regular conditions of one *installation* operation, in such way that it can result in damages for the property and for the *environment* or in the *exposure of workers* and of *individuals from the public* above to the primary limits of equivalent dose established by CNEN." (1988:2) (Italics in original)

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having reliable quantification. The nuclear experts define its closure when they declare the control of the contamination. In short, the notion of an accident involving radiation is supported by mathematical and physical assessments of contamination. Consequently, this paradigm implies the conceptualization of pain manifested through metric suffering.

Contrary to their colleagues from nuclear sector and biomedical disciplines, social scientists working with similar events aim to understand these phenomena as a process, and consider the conditions of vulnerability in which an affected population is found due to social, historical, technological, political and economic circumstances (Oliver Smith 1996:303). This viewpoint engenders a concept of disaster that highlights the social and political dimensions of the natural and/or technological catastrophic events and not the numerical, physical, biomedical aspects stressed under the scientists' notion of an accident. Batteau (2000: 2-3) claims that it is not the numerical loss of life that characterizes a disaster, but the capacity it has in generating the collapse of a cultural order, in damaging (sometimes fatally) entire communities, industries, or political regimes. Batteau's argument is supported by the analysis he undertakes of diverse disasters that have occurred during the 20th century, as for instance: Three Mile Island that damaged the credibility of U.S. nuclear construction industry; Love Canal where the community failed after it was identified with toxic waste; Bhopal that affected the entire chemical industry; and, Chernobyl that threatened the legitimacy of the Soviet government.[32]

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32 Three Miles Island (TMI): on the morning of March 28, 1979 a disaster occurred at the nuclear power industry in south-central Pennsylvania, U.S., at Three Mile Island Unit 2 nuclear facility (Behler 1986).

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In sum, disasters result from what political, economic and institutional power does to people and how they influence population response in conditions of natural and/or technological catastrophes. As result, those contexts produce social suffering (Kleinman at. al. 1997) among those social groups that are in positions of vulnerability. In this way, along with the metric suffering, radiation disasters bring trauma, distress, and disorders which are provoked not exclusively by the physical pain, but also by the struggle people undertake concerning health, welfare, legal, and moral issues arising in the disaster aftermath.

From this perspective, I understand the breaking apart of the abandoned cesium-137 teletherapy in 1987 in Goiânia to be a disaster, because it disrupted cultural, political and economic orders and unveiled the vulnerability of local social groups facing the harmful outcome of the nuclear technology. First of all, the disaster damaged the local economy because the goods originating from Goiás were rejected in national markets. Secondly, Goiânia and its inhabitants underwent a discriminatory process, which induced the cancellation of national meetings already scheduled for the city and also the avoidance of individuals traveling to other Brazilian states.[33] Third, the

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Love Canal: chemical wastes that poisoned the environment in the Love Canal area of Niagara Falls, in U.S. (Levine 1982).

The Bhopal disaster occurred on the night of December 2-3, 1984 when a gas leakfrom a factory owned by the Union Carbide Company killed thousands of people in Bhopal, India (Rajan 1999; Das 1998:137-174).

The Chernobyl disaster occurred in Ukraine, former Soviet Union, on April 26, 1986 when a reactor at Unit 4 of the Chernobyl nuclear power station exploded and, spewed radiation over vast stretches of northeastern Europe.

33 The individuals traveling to other city had to have a CNEN document

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administration of Goiás government was directly affected because money, personnel and political efforts were committed to the responses to the disaster, disregarding other relevant matters in other regions of the Goiás state. In an interview I had with the governor at the time of the disaster, Henrique Santillo declared that his administration was severely damaged not only in economic aspects but mostly in the political sphere. And, fourth, the disaster damaged Brazilian nuclear policy because it disclosed the inadequacy of the country's nuclear regulations and the deficiency of the Brazilian Nuclear Energy Commission __ CNEN__ in dealing with radiation disaster. In fact, the disaster validated the protest that independent physicists had always made against the conflicting functions of CNEN as regulatory and supervising agency of radioactive activities and its lack of control over all ionizing sources in the country. The institutional response revealed also the lack of an emergency plan and trained personnel to deal with disaster[34], the inadequacy of the centralization of CNEN's laboratories and

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certifying that they were contamination/radiation free. People traveling by car, were insulted and experienced theirs cars being stoned.

34 " (...) *the specialists from CNEN, whose academic qualifications ranged from technical-school certificates to doctorates were accustomed to working with radiation within determined regulations and under laboratory conditions. Their training was based on safety standards and accident scenarios appropriate to possible accidents in radiation laboratories and nuclear plants. That training had never been adapted to field conditions like those presented in the Goiânia accident. These experts were trained for the introspective work of the exact sciences and were continually trained in safety measures. Never were they trained to deal with the social and psychological aspects of this type of emergency.* (...) *In actuality, no one was prepared for a disaster of this size. The greatest shock was suffered by those who first discovered the facts and the conditions of the victims* (...). *Upon arrival in Goiânia, the advance team was appalled by the dimensions of the accident. This shock was compounded by the CNEN's lack of an infrastructure for confronting and controlling the situation*" (Carvalho 1991: 133-134).

In 1997, at a fallow up interview, the CNEN's President declared: *"At the*

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units in Rio de Janeiro[35], and the lack of regulation for radioactive waste repository. The disaster was a stake at the heart of nuclear policy also because it happened at the very moment (September 5, 1987) that Brazilian president, José Sarney, announced that Brazil had mastered the technology of uranium enrichment.

The damage the disaster provoked for the Brazilian nuclear policy, for the Goiás government and in the economic sector set up the field of forces that generated the answers given by institutional power, and also engendered the social suffering of the impacted population in the following years. In 1987/1988, the institutional power undertook the decontamination of radiation-affected people and places, while in the period of ten years (1987 – 1997) it processed the symbolic decontamination of the disaster. Functioning as a radiation container agent, the coalition between nuclear experts and state government supported measures and actions that disavowed any new claims of radiation- related distress; delegitimized the victims' everyday experience of pain; and erased and/or re-signified the marks the disaster had imprinted on the city. From the institutional perspective, recovery from the disaster implied freezing it in the past and

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time of the accident, all the personnel available from the enterprises working at the nuclear sector was, at some moment, transferred to Goiânia, in order to reestablish there the appropriate condition for the continuity of the life. Although the number of people with technical knowledge was satisfactory, it lacks preparedness for facing such situation" (Ciência Hoje 1997:57).
My translation of original text written in Portuguese.

35 The grand distance from Goiânia to São Paulo (919 km) and Rio de Janeiro (1,348 km), where the major radiological protection resources and CNEN units were situated, reinforced the already existing difficulties with the disaster management. For instance, the control of individuals' internal contamination that was made by monitoring urine and faeces resulted in the regular transportation of these materials to Rio de Janeiro during the first phase of the emergency (IAEA 1988:51).

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using the metric suffering paradigm constructed by nuclear experts during the early management of the radiation emergency. Nevertheless, the everyday experiences and narratives of disaster survivors disrupted the institutional claims of disaster closure and raised questions about the category of victim, as well as the culpability, long-term health care monitoring programs and compensation measures. In fact, the aftermath of the Goiânia disaster displayed the struggle undertaken by different social actors regarding the control of disaster knowledge, as well as the power dynamics of memory production.

In short, this dissertation aims to illuminate the ways in which a radiation disaster generated multiple experiences and interpretations of distress that resisted institutional statements of disaster closure, and invalidated the notion of metric suffering. It unveils the institutional efforts to domesticate the survivors' knowledge and to purify the city of its disaster scars. In the following chapters, I will discuss this conflicting agenda: the closure of the disaster versus its continuity based on the 1997 policemen's claim of occupational illness and, on the chronic pain suffered by the disaster's patients. In addition, I will indicate that the official designation of victim and the consequent eligibility for compensation were based on the marks the radiation had imprinted in the victims' bodies[36]. Thus, the concept of body and bodily memory serve as central analytical devices for the understanding of the survivors' social suffering.

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36 That is not the case of Chernobyl, where " (...) a *close link was established between the level of contamination of the environment and the level of compensation thus reinforcing the idea that the risk is first associated with living in contaminated territories*" (Lochard 1996:107).

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3. BODY SYMBOLISM AND THE KNOWLEDGE / POWER NEXUS

The process of attributing meaning to things, acts and ideas has been raised by anthropologists who see it as a source of power which situates the symbolic world as produced from a powerful system of classifications embedded in conflicting social relations. In opposing the idea of a social organization that maintains itself through consensus, some theorists have called attention to the need to situate anthropological interpretation within fields of forces where social representations are produced, dismantled and rearticulated. From this perspective, Eric Wolf's (1990 [1982]) conception of culture,[37] takes issue with the insistence on understanding culture as a "web of signification" (In Geertz's 1973 re-appropriation of Weber) produced by humans where divergent interests operate in terms of attributed meanings. By contrast, in Wolf's view, on the one hand, hegemonic representations, produced by the socially dominant groups in a particular context, are articulated and rearticulated so that produced meanings can be maintained. On the other hand, alternative categories, relegated to the realm of disorder and chaos, act within the cultural system in the sense that they illuminate

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37 *"Once we locate the reality of society in historically changing, imperfectly bounded, multiple and branching social alignments, however, the concept of fixed, unitary, and bounded culture must give way to a sense of the fluidity and permeability of cultural sets. In the rough-and-tumble of social interaction, groups are known to exploit the ambiguities of inherited forms, to impart new evaluations or valences to them, to borrow forms more expressive of their interests, or to create wholly new forms to answer to changed circumstances. Furthermore, if we think of such interaction not as causative in its own terms but as responsive to larger economic and political forces, the explanation of cultural forms must take account of that larger context, that wider field of force. 'A culture' is thus better seen as a series of processes that construct, reconstruct, and dismantle cultural materials, in response to identifiable determinants"* (Wolf 1990 [1982]: 387).

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socially and symbolically those aspects which had been made invisible. In such an approach, the production of meaning is understood with reference to specific social interests more than to universal conceptualizations, and thus involves situations of inclusion and exclusion of individuals in their daily lives and activities.

Anthropological studies centered on the representations and experiences of health, illness and the body have also shown that in the configuration of social life, the symbolic world is woven together by the interests of socially and historically defined groups. In the process of naming the distress, classifying the carriers, defining the casualties and recognizing a cure, scientific knowledge is legitimized and gains universal power (Foucault 1986; Birman 1997). Jean Comaroff (1982) has problematized the knowledge / power nexus and has called attention to the fact that the body can also be a vehicle for modeling and reformulation of established images as well as a source of the crystallization of doubt. In this manner, the body is not seen as a *tabula rasa* where the social body inscribes its mark, as the Maussian tradition had claimed (1983a [1950]), but rather it is configured as a locus of symbolic reappropriation and resignification. Comaroff offers a perspective which echoes that of Wolf in that both deliver to the observer the theoretical tools to analyze the symbolic plurality and dialectic movement by which meanings are determined in specific cultural contexts. Thus, symbolic systems have a political aspect, which can be used to legitimate situations of existing or contested domination.

This conceptualization is crucial in my understanding of the Goiânia

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disaster because it allows a place in the analysis for the survivors vulnerability through the dynamics of body symbolism. On one hand, in the case of policemen, the representations of the body indicated their subordinate status within the military hierarchical system, which is a strong component in the way they acted during the radiation emergency and later at the radiation waste repository. At the same time, it is through the representation of the body that the distinction between nuclear and non-nuclear workers is raised and consequently the notion of occupational risk. On the other hand, body representation speaks also to the power relationship established between the biomedical and nuclear teams over the classification and control of the survivors' distress, and sets up the scenario for physician / patient relationships inside the Leide das Neves Foundation. Thus, besides body representations, I am concerned with the survivors' embodied experience, understanding that history and social relations leave their " traces " in the body (Good 1994:55).[38] One way to look at this disaster "embodiment" is to consider the display the survivors made of their marks and their everyday experiences of suffering as a way to confront the institutional claim of the disaster closure.

4. THE POLITICS OF MEMORY PRODUCTION

Current studies on memory emphasize the view that images of the past are

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38 As Pandolfi (1990:255) wrote: *"this body becomes a phenomenological memoir that opens a new way of interpreting distress and suffering and illness"* (quoted in B. Good 1994:55).

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conveyed and sustained by multiple and conflicting experiences (Connerton 1996 [1989]; Yoneyama 1993; Lüdtke 1993; Taylor 1996; Sturken 1997). The idea of multiple memories is supported by Halbwachs' classic work on collective memory (1976 [1925]. In fact Halbwachs claims that there are as many memories as there are groups, that memory is by nature multiple and yet specific, collective, plural and yet individual. Nevertheless his major concern is with the moral unity of social groups, following Durkheim's (1979 [1912]) tradition. In contrast to Halbwachs' approach, 1990's works on memory focus on the politics of memory, that is, on the power relationship undertaken by diverse groups over remembering and forgetting past experiences. In fact, informed by Foucault's assertion (1989:92) that if one controls people's memory one controls their dynamism and their experience, contemporary works have examined the struggles different groups undertake to counter official hegemonic representations of the past.

In the case of catastrophic events, the process of remembering points to an intricate field of forces related to responsibility, financial compensation and health care. The production of disaster knowledge arises as a confrontation between official memory, sustained by institutional representation __ government and nuclear experts __, and subjugated knowledges[39] experienced by survivors' memories. Experiences of suffering

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39 (...) *"I believe that by subjugated knowledges one should understand* (...) a *whole set of knowledges that have been disqualified as inadequate to their task or insufficiently elaborated: naive knowledges, located low down on the hierarchy, beneath the required level of cognition or scientificity. I also believe that it is though the re-emergence of these low-ranking knowledges, these unqualified , even directly disqualified knowledges (such as that of the psychiatric patient, of the ill person, of the nurse, of the doctor __ parallel and marginal as they are to the knowledge of medicine __ that of delinquent etc.), ... (...) that it is through the re-appearance of this knowledge, of these*

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inscribed and incorporated in individuals bodies constitute bodily memories which resist official memory enclosure. Some works have emphasized that survivors disaster memories resist the closure of the past in terms of official knowledge, as in the case of Hiroshima (Yoneyama 1993); the Vietnam War, the AIDS epidemic (Sturken 1997) and Nazism in Germany (Lüdtke 1993). The distinctive presence of survivors in distress challenges official controlled accounts of past experiences. Survivors' bodily memories set up the scenario for the power dynamics of memory production and for displaying disasters effects beyond the limits established by the experts, as I will suggest in my analysis.

5. THE USE OF NARRATIVE

Anthropologists working in the field of the Anthropology of Illness and Health have emphasized the use of narratives as a way to enter this universe of individuals' suffering, which is not covered by biomedical understanding or consolidated by the practitionner's notion of disease[40] (Kleinman 1988; Good 1994: 135-165). These

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local popular knowledge , these disqualified knowledges, that criticism performs its works. " (Foucault 1980 [1972]: 82)

40 Here, I use the distinction between *illness* and *disease* as proposed by Kleinman who wrote:

> *"By invoking the term illness, I mean to conjure up the innately human experience of symptoms and suffering. Illness refers to how the sick person and the members of the family or wider social network perceive, live with, and respond to symptoms and disability"* (1988:3). *"Disease, however , is what the practionner creates in the recasting of illness in terms of theories of disorder. Disease is what practionners have been trained to see through the theoretical lenses of their*

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scholars point out that disease occurs not only in the body but "*on the body in the world*" (Good 1994:133) suggesting that the experience of illness is attached to other contexts of lived experiences at the cultural, historical, political and social levels. The analytical approach to suffering as a concomitant of illness and its social sources[41] gives rise, at the end of the nineties, to the notion of "social suffering"[42] understood as a theoretical turn in the perception of pain and suffering in mainstream anthropological work. While the illness and the experience of suffering are woven within an individual life history, the narrativization process is more than ever understood as a procedure through which the lifeworld is reconstituted.

According to comments I have made in preceding paragraphs, I perceive

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particular form of practice. That is to say, the practionner reconfigures the patient's and family's illness problems as narrow technical issues, disease problems" (Id:5).

The political, economic and institutional spheres of an individual's particular illness are recovered under the notion of "social suffering" as I discuss along the text.

41 In a criticism of his previous work, Kleinman argues that "*If there is no purely "natural " course of disease, there also can be no purely "cultural" symptomatology*" (1995: 101). And he continues: "*Today, I am uncomfortable with the style and even the reoccupations of "models", ethnocultural or other, which imply too much formalism, specificity, and authorial certainity, but models were definitely in my mind in the 1970s, a residue of symbolic and structuralist readings*" (Id:7).

42 "*Social suffering results from what political, economic, and institutional power does to people and, reciprocally, from how these forms of power themselves influence responses to social problems. Included under the category of social suffering are conditions that are usually divided among separate fields, conditions that simultaneously involve health, welfare, legal, moral, and religious issues. They destabilize established categories. For example, the trauma, pain, and disorders to which atrocity gives rise are health conditions; yet they are also political and cultural matters*" (Kleinman at al. 1997: IX).

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the life experiences of the population impacted by the Goiânia radiation disaster as experiences of social suffering. In fact, the ailments of the impacted population could not be separated from the field of forces that engender representations and actions carried out by institutional power and survivors in response to the catastrophe. In this way, like the sufferers of chronic illness, the ailments of the radiation disaster resist the objectification of "scientific" rationality and the biomedical strategy of localizing the suffering in a discrete site in the body.

Because the disaster disrupted the regular trajectory of people's lives in manifold ways, it engendered a knowledge of suffering which calls for a different perception than the one based on "metric suffering". The understanding of the "radioacidentados" and other affected individuals' of a continuous fear of radiation effects on their descendants, as well as the permanent expectation of cancer, calls for a different methodological approach. The same is true for the impact caused by the process of post-disaster urban relocation; the continuous individual struggles over the delegitimization and denial of their claimed distress; the erasing of marks imprinted in urban places; the endless facing of stigma; the everyday confrontation with unfavorable economic compensatory measures and an inadequate health care system, among other sources of survivors distress. In sum, the disaster interrupted the regular course of a person's life and from the moment it happened to an individual's life its trajectory is integrated into his or her life course, mixed with an individual life history. In this way, the narratives are appropriated to apprehend this suffering inserted into the everyday life of the disaster survivors and also to understand how they resignify and respond to

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institutional intervention and wider social networks. Briefly, I focus on narrativization as a process though which the lifeworld is reconstituted and revealed in the disaster aftermath.

The use of the illness narratives as a methodological artifice to enter into the universe of this "other" with whom the anthropologist works, has raised questions regarding the narrativization process itself. First of all, Good (1994) emphasized the dialogical and intersubjective quality of the stories, stressing that illness is essentially dialogical. In his words: *"It would be a grave error to conceive illness narratives as the product of an individual subject, a story told by an individual simply to make sense of his or her life"* (Id: 158). The act of representing and recounting personal/subjective experiences, reveals new dimensions of the lived experience and projects activities into the future. In this way, while representing and recounting the experiences, recasting the story through narrative memory, individuals resignify the past and project the future in using the interpretation/re-interpretation of the past[43]. From this perspective, the narrativization process is seen as a dynamic representation of individuals' everyday experiences.

Secondly, narratives are a source of contested judgments. Narrative studies have pointed to the use of narration as the instrument by which claims of the

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43 *"Narratives not only report and recount experiences or events, describing them from the limited and positioned perspective of the present. They also project our activities and experiences into the future, organizing our desires and strategies teleologically, directing them toward imagined ends or forms of experience which our lives or particular activities are intended to fulfill. Lived experience and social activities thus have a complex relationship to the stories that account them"* (Good 1994:139-140).

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imaginary and the real are mediated, arbitrated, or resolved through discourse (White quoted in Good 1994:134). In the case of disasters, the divergent narratives of past and present experiences parallel the contest between institutional power and survivors over the control of the disaster memory. The multiple and conflicting narratives in the aftermath of the disaster unveil the struggles over the "real" knowledge of the event and its political and legal outcome, for instance in financial compensation, long term medical care, choice of which medical treatment should be given, and identification as a disaster "victim". The efforts made by the institutional power to de-authorize the survivors' account of the disaster engendered painful experiences and pointed to this interconnection between symbolic forms and actions. I understand the delegitimizing process of the survivors' narratives as generating the public use they made of their bodily memory, as I will examine in the next chapters.

A third point raised by the study of illness narratives is the empowerment of the sufferers through this narrativization process (Kleinman 1988). Anthropologists have argued that to listen to and reproduce the patients' narratives are a way to counter the biomedical and institutional recasting of the patient's claims in a metric framework. I choose to privilege the voices of the Goiânia survivors in my dissertation, although I consider that their empowerment calls for much more than the reproduction of their narratives, as I will discuss at the final chapter. I am aware of the political limitation of this process of "giving voice to the voiceless", but I understand also that it cannot be ignored. As indicated before in this section, the disaster aftermath enacts a myriad of voices within a field of forces. While the institutional and scientific narratives have

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found their way in the Goiânia disaster literature, little significance has been given to the survivors´ stories. Although, my analysis is supported by the different social actors perspectives, the lived experiences of the individuals impacted by the disaster entitle them to have the centrality of this polyphonic discourse. For that reason, each chapter opens with fragments of the survivors' narratives.

6. OVERVIEW ON CHAPTERS

The dissertation consists of an Introduction and four chapters. Chapter two discusses the 1997 identification of the "cesium policemen" and the interpretive production of various disturbances, which afflict them in the aftermath of the disaster. It is devoted to understand the constructive process of social identity within the military police and how the policemen's subordination within this hierarchical system influenced the way they acted at the radiation disaster. I show that the vulnerability of this police subgroup echoed in the process the institutional power undertaken for delegitimizyng their claims and for disqualifying them as professionals at risk of radiation.

The third chapter discloses, through Margarida's life history, the sensations and experiences of being a radiation victim of the Goiânia disaster. I describe the scenario of the disaster as well as the institutional agents responsible for the official categorization of the affected population, that is CNEN and FUNLEIDE. Also, there is a description of the 1987 disaster site, the radiation exposure network, the habitat and social relations of the people mostly involved with the contamination. This picture is provided because I see the issue of urban poverty as one of the elements that contributed

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to the spread of the radiation. Nevertheless, the sociocultural patterns of those individuals lives is not the cause of the disaster, as the institutional powers had claimed. Blaming the victims for the disaster is part of the CNEN recovery process from the damage to its nuclear expertise, which I explore in the last chapter. In this section, I demonstrate also that the mathematical parameter that was used for registering a person as a victim was a source of various conflicts which led to the political actions of the *Associação das Vitimas do Césio-137,* a grassroots organization.

Chapter four shows that the production of the disaster knowledge results from the confrontation between official memory, sustained by the institutional power, and subjugated knowledges experienced by survivors' memories. I claim the urban spatial embodiment and survivors bodily memory as the *loci* of the politics of memory. The alliance between CNEN and government carried out the "sanitary" process" of re-ordering the pollution, in struggling to contain the disaster, to set it back into the past, and to erase it from public notice. The survivors, on their side, were constantly involved in a quest for legitimacy, by bringing their pain to the public arena. This process engendered the 1997 social suffering of those who experienced the 1987 events. Based on a period of ten years, I address the normalizing process of the containment of the disaster through the control of its memory and the delegitimization of the affected population' misery.

The last chapter integrates the arguments and evidence I introduced in previous sections which focus on the processual feature of disasters. As a consequence, these phenomena rather than events isolated and temporally demarcated in exact time frames these features reveal a social dynamic that leads to a myriad of interconnected

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occurrences and experiences, and unfold multiple interpretations not confined to the disaster emergency phase. I argue also that because illness and disasters are as much social texts as material events, the suffering of individuals impacted by the Goiânia disaster results from the effect of the radiation on their bodies but equally from social vulnerability and from the process of disaster meaning-making.

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TWO

A SOLDIER MUST OVERCOME

HIS ENVIRONMENT

"In 1996 I realized what was happening to me. After the surgery to remove part of the malignant tumor in my brain, the doctor guided me to the Araújo Jorge Hospital.[44] *He said:*

__ 'I'm going to direct you to my wonderful friend Doctor Criseide.'

So, I arrived there. I didn't even know she was involved with the capsule.[45] *Anyway, I got there and was talking to her ... and I brought up it up:*

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44 The Araújo Jorge Hospital, located in Goiânia, specializes in cancer treatment and is maintained by the Associação de Combate ao Câncer de Goiás (Cancer Struggle Association of Goiás), a non-profit organization.

45 Doctor Criseide de Castro Dourado along with doctors Carlos de Figueiredo Bezerril and Orlando Alves Teixeira were owners of the Instituto Goiano de Radioterapia (Radiotherapy Institute of Goiás) since 1985 and were responsible for the Cesium-137 capsule, which was the source of the Goiânia Radiological Disaster. ("Inquérito Policial" [Police Inquisition] - 1987 - "Auto de Qualificação e Interrogatório" [Personal Testimony from Interrogation]. SR/Go - Cartório. Page 25. MINISTÉRIO DA JUSTIÇA. DEPARTAMENTO DE POLÍCIA FEDERAL).

On July 29, 1992, the Federal Justice system (Justiça Federal) found these doctors guilty of crimes of homicide (unintentional) and body lesions. Therefore, they were sentenced to three years in prison under an "open" condition in which the prisoner continues to work in the public sphere and sleep in his / her residence. The person s remains under police supervision and cannot leave the city or region. The doctors also were obliged to carry out community service. In 1996, the doctors were forced to pass the night in thc Casa do Albergado (a shelter prison) for this and one group of colleagues

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__ 'You know, doctor, do you think this whole thing could be from the cesium ? Because I worked there for a long time. You know, because in my family, no one has ever gotten cancer until today. I am the first one.'

Then, she got really upset and said that these things had nothing to do with each other. So then I said: 'but why not '? She said that if the cancer were due to the cesium, one of my children would have been born with some sort of genetic deficiency. So, I said:

__ 'But doctor, that's exactly what happened. My son was born with one of his heart valves missing. When he was born in 89, I was already involved with this cesium case for two years.'

The doctor got really mad and referred me to another doctor. A little while after that, it started coming out in the newspapers how that doctor was up for a court decision and the newspaper listed three other doctors. And then I put it together why she had gotten so mad at me. Then it was all clear to me. So I was like: Now I'm going to get to the bottom of the real story of what happened to me".

(Soldier Carlos. April 8, 1997).

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organized a petition to the Judiciary Power (Poder Judiciário) that the sentence of three years be converted to in-house "prison" or obligatory hospital services. This mobilization received a great deal of media attention and it was due to this exposure that Carlos identified the doctor mentioned in the above quotation. In December of 1998, these professionals were given pardon during Christmas by president Fernando Henrique Cardoso. By such a measure, it was as if they had never been convicted in the first place. ("Juiz condena médicos no caso do césio". Newspaper *A Folha de São Paulo.* August, 1992; "Grupo faz manifestação em prol de condenados do césio". Newspaper *O Popular,* May 1996; "Responsáveis pelo césio 137 ganham liberdade". Newspaper *O Popular*, March 1999).

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"I only understand it like this: I used to weigh between 75 and 77 kilos. After this whole thing, I'm not even... I don't have one drop of ... of shame in saying to you that if my marriage has not been damaged until now, it's because I have a super wife: but
about my sexual life, for a guy who was good (emphasis) *you know a real stud, overnight it (my body) has turned into bare-bone skeleton of what it used to be. There ain't nothing there anymore."*
(Sergeant Alexandre. March 26, 1997)

* * *

"No. We didn't get any sort of special recommendation. It's something. ... I guess we can ... smile about it, really. We didn't have nothing special to wear. You know, the uniform we wore? These hip boots ("coturno") we wore, that we stepped (emphasis) *in these contaminated places, for real. I'm serious, it was like that, we really walked around in that stuff .... We would really... actually handle the stuff - I'm not going to say the real live cesium, no, but maybe some pieces of it. Because there were parts of.... pieces or a bit of... particles in the backyard, all over the place. You know ? How can I prove there wasn't ?"*
(Sergeant Alexandre. March 26, 1997)

* * *

"*The Commissão Nacional de Energia Nuclear - CNEN* (Brazilian National Nuclear Energy Commission) *should have given orientation to the workers. Right? Should have given protection. Instead of us wearing this uniform and*

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sitting there 24 hours over there, working, we should have been there less time and with another clothing. Take it off and then throw it away. Just like they did. You know what I'm saying ? Folks who understand nuclear energy, they should have given us some guidance. They know what's going on, they should have let us in on it too. Even though, from what they say around here, no one really knew what that stuff was. Not even the Commander, nobody knew. So, there were no instructions for us. That's what we needed. There should have been special clothes that we wore, took off and threw in the trash. And we should stay less time in the contaminated areas. Cuz, you know, the people from CNEN, they were there like an... An hour.....half an hour. You know ? they took off those clothes and threw them in the trash. That thing went straight to the Waste Repository. Not our uniforms. We wore them again."

(Sergeant Paulo. April 7, 1997)

* * *

"*If we go up there* (to the Commander) *and say it like this: Hey ! I'm sick over here. There's no way I can work today, they're like... They don't care at all about you. You bet if it was some officer, well then he's in the clear, off from work. He just goes there and says: I need to go in such and such place. And presto ! he's on his way. But if it's a soldier asking, no way. One time we were in formation over there at the Anhanguera Battalion. The phone rang and the operator was like:*

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> __ *"Look, there's a call for you. Your wife called and said that your son is ill. And that you need to figure out what to do.*
> *So, I said: "Permission to go and answer the phone. See what's happening with my family.*
> *The captain turned and said:*
> __*"Look here! You leave your post only when three of your family members are on their death bed".*
> (Soldier Carlos. April 8, 1997)

In early 1997, ten years after the radiological disaster involving the Cesium-137 capsule in Goiânia, the local media published various stories of policemen who claimed that their unexplainable illnesses had a common cause - contact with radiation. The symptoms varied: brain tumor, tumor in the forearm, brain lesions, deformed children, body discolorations, psychological instability, deep emotional states, intense perspiration on the left side of the body, sexual impotence. The narratives direct one's attention to common work experience: namely, duty as a guard at the Radioactive Waste Repository in the town of Abadia de Goiás[46] and/or guard in areas, which had been defined by the CNEN as foci of radiation[47]. The experience of working in the

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46 Located 20 kilometers from Goiânia on Br-060 highway.

47. The CNEN classified eight foci as the principal contamination sites. In addition to these, they identified "*residual contamination points in 42 residences*" situated in various cities including: Goiânia, Aparecida de Goiânia, Anápolis and Inhumas. One hundred kilograms of contaminated lead, derived from the so-called

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disaster area united these people into a particular group within the military ranks. The media came to identify them as the "cesium policemen." The accusation they made through the media combined with the desperation of isolated individuals manifested itself in an organized movement involving the Associação de Cabos e Soldados da Polícia Militar do Estado de Goiás - ACS (The Corporal and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units)[48] as well as a group from the Brazilian House of Representatives. In April, 1997, there were 128 names on a list provided by ACS. Some months prior, at the end of 1996, I had already gathered data concerning these experiences of illnesses during my fieldwork and these military policemen (MP's) were already part of a recognized social network. Along with the *radioacidentados*, the "cesium policemen" are the main actors for this study of the Goiânia Radiological Disaster during the post-1987 period.

The narrative fragments I used to begin this chapter indicate the lens through which I understand the MPs' interpretation of various disturbances that afflicted them in the years following the disaster acknowledgment. At the moment they face their illnesses, they revisit their past and attempt to make sense of the present through the reconstruction of their stories. In their search for professional and family memories they perceive the distinction between nuclear and non-nuclear professionals acting during the

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Junkyard III (one of the eight contamination foci) was found in the city of Goiás Velho, the old capital of Goiás State (CNEN: 1987).

48 The Associação de Cabos e Soldados da Polícia Militar e Bombeiro Militar do Estado de Goiás (The Corporal and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units) was founded on February 28, 1991.

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radiological emergency. It is at this point that they come face to face with their distress. Their perception of a suffering body runs parallels with the recognition of the different professional identities engendered by the disaster context. In the process of attempting to overcoming their distress, the "cesium policemen" unveiled the structure of inequities in their professional corporation which is a military body that also demands discipline, obedience and humiliation. The illness experience thus links the construction of their military identities and the labor demanded of them during the first moments of the disaster. Both are produced by the hierarchical system embedded in the military institution.

In the construction of this causal nexus which the MPs claim between labor / illness / radiation, one concept recurs again and again in their reports: they were contaminated, in the sense of becoming sick, because they were not trained or equipped satisfactorily to perform their duties in a radioactive area which was harmful to their health. In the confrontation with this unknown, odorless, threatening enemy called radioactivity, the certainty that special precautions and equipment were necessary became more apparent as time passed and as the policemen interacted with the nuclear experts. The perception the "cesium policemen" had of two different bodies acting in response to the disaster, that is the nuclear expert body and the police body, provoked anguish, anxiety and the assertions about lack of protection, contamination and illness. They discovered that in the combat against the same enemy - the radioactivity - dissimilar body

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techniques[49] were in use, a fact that exposed their vulnerability and increased their suffering.

The nuclear technicians with their white, orange, brown and blue overalls had an impact on the imagination of the persons living the disaster. While the technicians were associated with the CNEN, a target of suspicion and sharp criticism during the phase of decontamination,[50] they were also the specialists whom the townspeople saw cleaning the streets, the houses and the contaminated persons. In this manner, they assumed a role of authority yet with ambiguous characteristics: as agents of mistrust but at the same time perceived as saving the city from this unknown thing called cesium-137. The overalls are, by means of metonymy, an expression of the social relations established by the disaster.

During my fieldwork these overalls appeared in various circumstances. Initially, they emerged in the memories of children affected by the disaster. These overalls took center stage in the world of infantile jokes uttered by the children who lived next door to one of the principal points of radiation. When this area was fenced in and the decontamination process had not yet begun, some of these street kids crossed over the

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49 *"J'entends par ce mot (techniques du corps) les façons dont les hommes, société par société, d'une façon traditionnelle, savent se servir de leur corps"* (Mauss 1983a [1950]: 14).
" I understand this expression (the techniques of the body) as the manners from which the men, in each society and based on the tradition, learn how to use their bodies."
My translation of original text written in French.

50 The phase of decontamination is established by the CNEN as the period spanning the identification of the disaster until the liberation of the city, in this case: from September 29 to December 21, 1987 (Tranjan and Rabelo 1997: 3).

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roped-off boundaries and made their way into the area referred to as the "Casa da Fossa" ("House of the Cesspool"). In this space they repeated the actions they had seen of the men with white, orange, brown and blue overalls in the hot spots of the neighboring areas:

> "*Oh yeah, I played here when it was fenced in. We were curious. Me, my sister and 'favela'* (ghetto shantytown) *kids played in there. When one said we couldn't go in there that 's when we really went. The guards sat there on little chairs and we played it off and then went in. Before, when there were no guards, we went in there like we were scientists, doctors, CNEN technicians. We got wood, sticks like they were our equipment... we put on some large clothes, we said they were the overalls... Everything we saw during the day, when it was night we went and did everything we could think of.* (Marina and Rosana. October 4, 1997. In 1987, these youth were ten and seven years respectively).[51]

Upon a second consideration, the clothes of the technicians seem to be an object to be well kept and that when in use, they represent an imaginary power. Sergeant Alexandre, one of the affected policemen, keeps a pair of these white overalls in his house. Ten years ago when he received a pair he proceeded to write his name on the side of it accompanied by the word/number 007. He explained to me that it was a superb

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51 Marina and Rosana are classified as Group III patients, according to the criteria of the Leide das Neves Ferreira Foundation, an entity created by the State Law 10,339 of December 9, 1987. The law affords assistance to the population affected by the disaster as well as it produces scientific knowledge about such a disaster's consequences. Despite all of this, these two young girls never received any sort of medical aid from this institution.

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piece of clothing for riding a motorcycle. The inscription of secret agent 007 on the overalls suggests a link between the children's games and the behavior of the policeman in the sense that both lived vicariously through their fantasies based on their observations of the behavior of the technicians working to decontaminate the city.

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Plate 01.
Sergeant Alexandre, at his house, displaying the white overalls received from CNEN technician.
(From Telma Camargo da Silva 1997)

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In 1987, the media leaked the information that the CNEN would not be able to control the disaster because it didn't have the proper techniques or equipment to act in such a state of emergency. This was also demonstrated in the ways the nuclear experts covered their bodies to perform their activities in the radiological emergency:

> *"The seriousness with which these technical ragamuffins from the CNEN became ridiculous as they traced the trajectory of the cesium-137: no one wore a helmet or masks, rather they wore sports caps; many worked without gloves, and the majority of the overalls were common ones similar to those worn at gasoline stations, bought at supermarkets because government warehouses run out of proper clothes. Most of the workers wore tennis shoes in the contaminated areas, only taking care to cover the shoes in plastic bags when they stepped into more intense areas of contamination".*
> (Magazine *Isto É.* October 14, 1987. "Diante da Morte e Perplexos" In Izumino 1997: 119).

Childhood plans of a future profession, dreams of being a secret agent, and ragged technicians: in 1987 the overalls expressed the reality of the disaster intersected by different experiences concerning age, profession and lack of technical knowledge about how to act in an emergency situation. Ten years later, in 1997, the overalls reappeared. By this time they signal the different knowledge held by professional groups acting in situations of disaster involving radioactivity.

Studies in anthropology and semiology have pointed to the communicative and symbolic aspects of the clothing, (as in Barthes' (1967) study of women's dress in French fashion magazines), have established a grammar of the mode based on combinatory rules making using of color as a distinctive element. Sahlins (1976) argued that the symbolism suggested by the differences in vestments __ among others, the use of cotton, wool, silk__ parallels the distinction defined by age, class and gender. In his

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perspective, the clothing system works in western society as a totemic operator because it articulates the classification from the natural sphere with the categorization from the social order. Considering the symbolic and semiotic potentialities of the cloth, Weiner and Schneider (1989) claim that cloth also consolidates social relations and mobilizes political power. Bean's analysis (1989) of Gandhi's use of Khadi[52] as an element of the struggle for Indian liberation from British rule is an example of the cloth perceived in its symbolic, communicative and political dimensions.

My understanding of the overall's representations in the context of the Goiânia radiation disaster is based on this perception of the cloth's moral nature: its capacity to embody and transmit social value. The uniform used by nuclear workers was transformed in the aftermath of the disaster as a political vehicle for ascribing legitimacy, authority and to conceal identity as in the case of "cesium policemen". The overall as a uniform works as an emblem of security, proper to face the risky situation, and for that reason it was reappropriated by the policemen in their struggle for the official recognition of their claims of suffering.

In order to understand more fully the emergency of the "radiation illness" which affects the military policemen, I use as a basis the theoretical presuppositions stated earlier that: a) symbolic systems have a political perspective, which can be used to legitimate situations of existing or contested domination;[53] b) the culture concept is

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52 Homespun and hand-woven textiles.

53 *"It is possible and necessary to politicize the anthropological approach and investigate in what ways symbolic systems are elaborated and transformed in*

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associated with the sense of fluidity and permeability by means of which social groups exploit ambiguities of inherited forms and give new meanings and values to them in accordance with the present circumstances; c) social memory (Halbwachs 1976) is articulated also through the significance afforded to the body and towards the multiple senses that different social groups articulate in contextual relations of inequality [54]; d) the control over remembering and forgetting past experiences implies power relationships and unveils the politics of memory grounded on Foucault's assertion (1989:92) that if one controls people's memory one controls their dynamism and their experience.

7. SURVIVING THE DISASTER:

MILITARY POLICE ACTING IN THE RADIOLOGICAL EMERGENCY

The military police were one of the first professional groups to arrive on the disaster scene like the so called "liquidators"[55] from the Chernobyl disaster. The

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order to organize political practice, legitimate a situation of existing or contested domination. It is important to investigate in what manner groups, categories or social segments construct and utilize a symbolic reference that allows them to define their specific interests, construct a collective identity, identify enemies and allies, mark differences in relations to some and dissembling such differences in relation to others" (Durhan 1978:87).

54 Important changes in political and social order are accompanied by changes in mnemonic schemes inscribed in physical forms (Comaroff 1985:124).

55 The name "liquidators" comes from the Chernobyl disaster's literature and refers to the first firefighters and soldiers that arrived at the scene of the disaster to "liquidate" it. Some authors refer to 800,000 liquidators disseminated among the general population affected by the radiation fallout from the Chernobyl plant (Lochard 1996:107; Vernet 1998).

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first participation of the MPs occurred some time before any official word of the radiological disaster. That announcement came on September 29, 1987. Some of the narratives I have collected together with those of the MPs, the "cesium policemen," indicate that they had contact with contaminated persons and entered into the hot spot areas before the CNEN technicians ever arrived in Goiânia. Reports tell of a Radio Patrol (Rádio Patrulha), which was activated in the middle of September in order to resolve certain problems related to gas leakage in the area of 57th street and to attend to persons suffering from food poisoning.

> *"I worked with the Radio Patrol (RP) in the Regimento da Polícia Montada. I worked at night and there was a lot of police car traffic. When all of these food poisonings started happening (that's what they called it, right?) to be sick from food .... My squad car was chosen to give help. Some people, including me, helped out. So as it happened, you know I was working, I didn't know what was happening. They said to us that the first time around we were doing radio patrol and that the problem was something to do with a gas leakage, right? On 57th street. We had to look for the leak. We looked and looked and found nothing. We even checked the house where today it's all concreted up, Roberto's house on 57th street. That house, we went in there. We stayed in there".*
>
> (Sergeant Alexandre. March 26, 1997)

The CNEN learned of the disaster at 3 o'clock in the afternoon on September 29 and at 12:30 in the morning on the 30th the first CNEN technician arrived.

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He was the nuclear physicist José de Júlio Rosenthal, Director of the Department of Nuclear Installations (Departamento de Instalações Nucleares - DIN), (CNEN 1988: 1). However, during the period before the implementation of emergency plans, in which CNEN, FURNAS (Furnas Centrais Elétricas S/A), NUCLEBRÁS (Empresas Nucleares Brasileiras S/A), CIVIL DEFENSE (Defesa Civil) of Rio de Janeiro and the nuclear emergency wing of the Hospital Naval Marcílio Dias of Rio de Janeiro (Marcílio Dias Naval Hospital), all participated, the Civil Defense of Goiânia had already been working in the disaster area. This moment of response, which Colonel Artur calls the *first hour* ("primeira hora"), was when various military men entered the disaster area without any sort of knowledge or instruction concerning radiological protection. This situation parallels the one experienced by the "liquidators" that went also to the radiation site without any previous notification of the risk they must undertake[56].

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56 "Il n'y a plus d'ennenmi. Seulement cette radiation qui est partout et qui n'a pas de couleurs. *"Alors elle est comme Dieu. Dieu est partout et on ne le voit pas."* Il n'y a plus d'ennemi. Y-a-t-il même des responsables? Les premiers pompiers, les soldats, ceux qu'on appelaient les *"liquidateurs"* (de l'accident), sont partis sans savoir où ils allaient, ce qui'ils risquaient: Personne ne les a prévenus, encadrés, équipés: *"Tout va bien. Lavez-vous simplement les mains avant de manger"*, leurs disait-on alors qui'ils avaient subi des doses cent fois supérieures à ce qu'un organisme peur normalement supporter. Qui s'en souciait? Seuls le chef avaient des dosimèters, et encore les résultats étaient-ils tenus secrets." (Vernet 1998)

"There are no more problems. Just this radiation which is everywhere and which has no color. *"So, the radiation is like God. God is everywhere and nobody sees Him."* There are no more enemies. Is anyone responsible? The initial firefighters, the policemen, those who were called the *"liquidateurs"* - *liquidators* - (of the disaster), they went without knowing where they were going to, or what risks they would face. Nobody warned them, trained them, or gave them appropriate equipment: *"Everything is all right. The only thing you have to do is to wash your hands before eating"*. Those were the words that were said to them, while in fact they received radiation doses a hundred times more the dose that a human being can support in normal conditions. Who was concerned

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The colonel responsible for the Military Cabinet of the State of Goiás, Head of the Governor's Palace Security and coordinator of the Civil Defense of Goiás, Colonel Artur, who I refer to as the "Colonel of the first hour," began to collect stories of those directly involved in the disaster, in an attempt to define a social network of the contamination and to map specific locations which should be evacuated and maintained under guard. It was the military policemen who occupied the areas that would later be marked as the foci of radiation and who carried contaminated persons to the Olímpico Stadium where they waited for assistance from a team of specialists in nuclear emergencies. It was these very policemen, from the first moments of the recognition of a disaster, and before any sort of evaluation of the contamination, who stood guard around the physical area of the disaster. This measure was taken in order to avoid both the pillaging of the evacuated houses and the further contamination and/or irradiation of persons who would enter those places.

Recalling these initial moments of the disaster management, the "Colonel of the First Hour" recounts:

> *"It was a Monday* (September 28, 1987) *when the palace* (of the Governor) *was informed... I went home for lunch around 2 P.M. and it was approximately 3 P.M. when I received the call from the governor with the order to activate the Civil Defense and direct the...* (he said) *that I went to the Public Hygiene Control Unit* (Vigilância Sanitária) *because there had been some sort of*

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with this? Only the supervisers had the dosimeter, and the results of the doses were kept secret."
My translation of original text written in French.

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accident with a cesium capsule and that I need to take proper measures to isolate the area that had already beencontaminated... and he had already contacted the State Health Secretary and had already communicated with the CNEN in Rio de Janeiro. (...) *So, I went straight to the Public Hygiene Control Unit, in the Setor Aeroporto (Airport District)*[57] *and gathered some information from the people on the scene. Who had left the capsule there... at Public Hygiene Control Unit.... if one could get close or not .. . The Firemen had already delivered the information that one could not get close. They gave me the address of the Ferro Velho* (Junkyard) *where the capsule had been taken apart and so I left. The Governor really wanted me to go after these people involved with the material and quarantine them in the Olímpico Stadium on Paranaíba Avenue. This is what we did. I went to the Junkyard and checked out various addresses, all of which are documented in thos papers over there. Goiânia neighborhoods, periphery, countryside places ... I know that the first day we spent the whole afternoon, night - it was like that all day and night. We finally rounded up the people with a military police bus and governor's palace automobiles. Passing information back and forth. Then we, well I supplied the tents for the Civil Defense over there at the Olímpico Stadium and we put everyone there. This was the first thing we did. The CNEN wasn't there yet. The Center of Military Police Operations* (Centro de Operações da Polícia Militar -

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57 Till 1956, city airport was located at this area. In June 17, 1956 Goiânia airport facilities moved into Setor Santa Genoveva at the north section of the city (IBGE. *Enciclopédia dos Municípios Brasileiros*. 1958: 180). The former area kept the name Aeroporto and at late fifties its major characteristic was that of a residential neighborhood. At the time of Goiânia radiological Disaster, this region was in the boundaries of Goiânia downtown, and it was turning into a commercial sector whose activities concentrated on medical offices, medical laboratories and used cars' dealer.

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COPOM) *was activated, Colonel R stayed with me the first night. We mobilized two or three radio patrol units. We went to evacuate the people. I went and got D. I had to pull him out of inside his house. His wife helped me get him out, he didn't want to go. He was already ailing, I realized this. I had to put him in a choke hold and tear him out of there. Me with some other soldiers personally took his arm with my hand and placed him in the palace car. I took the girl Leide das Neves Ferreira and put her in the Governor's car. I took her on my lap. I had to play with her, she was crying heavily. She didn't want to go. When professor José de Júlio Rosenthal arrived, I had already gathered all of the involved people. I investigated: who is related to whom; who had contact with the powder etc. We put together a convoy, bus after bus and we headed out like that. We spent the whole afternoon, night and next morning picking folks up and taking them to the Olímpico Stadium. When I saw that the disaster involved a lot of people I had to set up more tents. I thought that there weren't enough contaminated people ... Tuesday dawn found me taking the last folks to the Stadium. We collected the people and firemen together with the civil defense crew isolated the houses. In reality, there were only the MPs, fire department and the Civil Defense in this operation. MP, huh? Everything was MP. At that time, it wasn't divided into fire department and the military police. During this phase there were never any more than 40 people. The normal and possible work schedule in such a situation would be shifts of 12 hours in every 36 or 24 in 48. But the folks from the Civil Defense worked almost non-stop, there were no substitutes. The people from the Goiás Health Organization* (Organização de Saúde de Goiás - OSEGO), *the drivers that we asked for, the*

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ambulance for transportation, everyone abandoned the scene when the press released the news letting everyone know what the real deal was. The floorboards of the car I carried Leide das Neves Ferreira had to be exchanged. We didn't know that clothes could also be contaminated, you know ? I carried Leide on my lap and went home with the clothes. Just in the time to wash and put the clothes on, right ? The shoes stayed always the same. I know that I had to exchange the pedals in my car. I exchanged the padding in my car. Later when the general headquarters of the disaster was installed in the OSEGO, the CNEN personnel recommended that we enter into the area of risk wearing those special yellow plastic boots. So, I took my shoes off and put them to the side. One day someone passed by my shoes with a radioactivity counter and it went off. They looked at my shoes and bing, bing, bing, the alarm went off. They yelled: Oh my God, throw those shoes away. I had been wearing those shoes for about a week. At my house, I usually enter by the underground garage and get in the elevator. So, we did a sweeping of the elevator. We removed the carpet and threw everything out into the radioactive waste. For precaution, I threw out my uniform, my kepi, everything, you know?

(Colonel Artur.[58] April 18, 1997; April 24, 1997; May 9, 1997).

The Colonel of the First Hour characterized this job of evacuation during

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58 Colonel Artur was recommended by professor J.J.R. of the CNEN to go to Rio de Janeiro for treatment. Meanwhile, he refused to stop working in Goiânia. His blood tests, done in 1987, showed leukopenia. He is not classified within any of the defined groups by the Leide das Neves Ferreira Foundation as a "victim" of the disaster. Thus, he doesn't receive any sort of medical follow-up from the mentioned institution, which is responsible for the monitoring of the affected population of the Goiânia Radiological Disaster.

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the first moments of the disaster management as similar to that of giving orders in a prison - to force persons out of their homes against their will and take them into isolation:

> *"We didn't have a special way of doing this job because we weren't trained to face radiological disaster. Then, when we knew it was some radioactive disaster, we didn't have a specific procedure. But, by the orders from the governor to isolate the affected areas, we then had to investigate those persons who had contact with the cesium and place everyone in the Olímpico Stadium and then isolate the pertinent area. So we did that. After that, then, we had to get all the families out of their homes, during the afternoon, at night, early in the morning. Lots of bawling, lots of shouting. It was like a prison scene. We were taking people out of their homes against their will. I told them, I tried to explain to them that it was because of the cesium and everything, you know? But they didn't want to go and we had to take them out anyway. It was a very tough and delicate job. Carried out at times in somewhat violent acts because we had to get the people out of there, right? It was more or less like that. A crazy situation, that's .. .an accident. It was an attitude of roundup the people, isolate them and some thing we caught here and there about the relation it all had with the cesium"*
>
> (Colonel Artur. April 24; 29, 1997).

Despite the fact that it was a radioactive emergency, the MPs performed their tasks in the first moments as professionals acting as in a routine military operation. They maintained order where utter disorder had threatened stability and they were

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responsible for locations that demanded special security. For example, when the first two victims were buried[59], some sectors of the population neighboring the cemetery, instigated by a local political representative, came and protested against the burial. They threw rocks at the caskets and demanded that the corpses be disposed of at the Radioactive Waste Repository. In order to avoid this sort of manifestation in subsequent burials, a strong police force of the MP shock troops was requested. The police not only surrounded the cemetery hours before the arrival of the corpses, but also a heavy police escort accompanied the car carrying the caskets during the trip from the airport to the burial site.

The Military Police also guarded the hot spot areas, the containers and metal barrels where the radioactive waste was deposited. This was done while waiting for a decision of the precise locale for this waste to be transported.[60] Afterwards, a police crew was organized to relay this material from Goiânia to the provisory depository. This process lasted from October 25 to December 19, 1987. There were 275 trips made between the sites (CNEN. 1987). During this period, some of the policemen told me that

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59 The first two fatal victims of the disaster, L das N.F. (age 6) and M.G.Fe. (age 38) died on October 23, 1987. Four days later on October 27th, I.B. dos S. (age 22) died and on the 28th A.A. de S. (age 18) passed away (CNEN 1987). The burial, which involved the shock troop of the MP, occurred on October 29, 1987.

60 The decision as to where such a Deposit would be constructed, at this time called a Temporary Waste Repository (Depósito Privisório de Rejeitos), was heavily disputed among politicians and other authorities both at state and federal levels. The resolution came finally on October 16, 1987 (Croft et. al. 1988: 100). The transportation of the waste from areas under the process of decontamination to this repository began on October 25, 1987.

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those on duty at 57th street were so tired that during the night shift they often placed cardboard on the ground and slept in the contaminated areas. Others, taking advantage of the mango season, picked fruits from the neighboring trees. At this point, I would like to further contextualize the environmental situation at hand here on 57th street:

> *"With the accident now discovered, the CNEN technicians isolated five residences on 57th street with partitions (approximately 1,000 square meters), took away the radioactive carpet and poured buckets of concrete over the critical areas in order to alleviate the radioactive environment. One could say that at this moment, a second phase of contamination began: the people could not circulate freely around this area but dogs and chickens stayed behind. Even though the ground was covered with concrete, the underlying soil remained unprotected, susceptible to bad weather. Investigative helicopters were flying over head, causing clouds of radioactive dust along with contaminated mango tree leaves to swirl. This situation lasted until October 24, when those responsible were alerted by me* (the author of this article) *that plants 60 meters from the critical areas had been contaminated by radiation. Forty days had gone by before the following measures were taken: cut off the tops of all the major mango trees and begin to exercise more control over the environment. This was done by means of special equipment and an around-the-clock technical team, specialized on environmental pollution, who rigorously monitored the soil, plants and the air. However, during this third phase, until December 6, conditions remained favorable for the spreading of radioactive dust, because the soil continued to be exposed and susceptible to inclement weather."*
> (Ferraz 1988:29-30)

The MPs realized only as the disaster itself unfolded that these special tasks actually required special preparation and equipment. The arrival of the nuclear technicians with their white, orange, brown and blue overalls equipped with Geiger counters and dosimetric pens marks a different sort of competence, one that incorporates a different kind of bodily caution and awareness. This bodily behavior is quite other

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than that of military training, which, at this point, was evidently not completely appropriate to deal with radiation and contaminated people and environments. The death of four disaster victims in Rio de Janeiro made it clear that this invisible and odorless enemy could not only cause future illness but also kill in the present. The military personnel had worked directly with the contaminated patients and they learned from the nuclear experts that the elements of time and distance were crucial to consider if one wanted to avoid contamination and radiation. The military personnel also noticed that the nuclear technicians took off their overalls along with their tennis shoes and rubber boots after work and left them in the fields of contamination. They didn't return to their hotels wearing such working clothes. On the contrary, the policemen had been going to and from home wearing the same clothes from these areas of risk. Such observations come to the fore in various interviews conducted with the "cesium policemen":

> *"Ok. One dies. Soon another one will die, and another and because we evacuated these people during a desperate situation, a scene of panic, separation of families, taking them to the Stadium, it's ... we were there a while, in the Stadium. A storm felt and the folks at CNEN quarantined the stadium. No one could enter. They were wearing their clothes, the required overalls, all those required for radiation. We policemen just had our uniforms, you know ? The CNEN technicians had those orange overalls..."*
> (Colonel Artur. April 24, 1997).

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The recognition that there was a significant difference between the construction of two bodies acting at the disaster scene - the nuclear expert [61] body and the police body - caused panic and fear among the MPs who worked in the emergency of the disaster. The maintenance of those professional identities at the contaminated areas could only occur, according to the Colonel of the First Hour, by a refresher course in the codes of military discipline and hierarchy accompanied by strict adherence to regulations.

> *"There were just the MPs. So I had to get them all in shape, I had to indoctrinate them you know, we had to face this situation (he was touched by the memory of the facts and started to cry), all those training exercises that we went through in the barracks, now I had to put it all in practice. There were just us there and we had to deal with the situation. The OSEGO folks abandoned ship and no one wanted to drive the ambulances. In fact, we were alone there in that reality. So, I had to put a lot of effort myself not to become desperate and stressed out, you know? At that moment, there was no one to run to, get it? Just me and the troops, I made it simple and it was good like that. If I got weak, it could get out of hand ... Before going out on duty, I went around*

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61 Izumino's work on the Goiânia disaster uses this term in order to designate the professional sectors which played special roles in the situation: the CNEN, the nuclear experts and the media. *"The CNEN, therefore, had the responsibility of 'solving' the accident from the treatment of the victims to the determination of guilt. They took on the principal tasks, in the technical sense of the term, and also as the nuclear authority, ,the technicians promised that they would keep the 'public opinion' properly informed. These 'experts employees,' in the Weberian sense, are participants of a special type of expert system* (Giddens, In Beck et. Al. 1994: 82-91) *concerning their rapport to the State and thus by means of their political and normative role"* (1997: 53). In addition, the press is also a expert system of experts that, like the nuclear participated in the production of the Accident as an event" (Id: 86).

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> *and talked to everyone, you know indoctrination, otherwise they'd get all afraid. When we went out there to dig up and remove the bus stop in front of the cemetery, I had to use the argument of regulations to convince two of the soldiers who were with me. They didn't want to pick up an ax and chop up the ground. They were like: we tested this and it was contaminated, right? So I said: look, do it like this. I picked up the ax and broke up the ground myself, ripped out part of the stuff there. Then I said: I did it, so why can't you all do it? There's no problem. The job's gotta get done one way or another. Someone's got to rip this place up, isn't that right? It's us, right? So, let's go to it and if you all don't carry out this order, the appropriate regulations will go into effect. I threatened them that I would throw them in the slammer for disobeying an order. That was the deal for the whole crew, ok? After that, it was the major, lieutenant-colonel, who came upto me and said: Colonel sir, we're doing it, all right then, you did it, so we're going to carry out the task. I said; all right then, let's go, come on now, are we not men? Are we not soldiers? We'll see, this will prove what we're really made of. You see, I had to use this kind of talk at that time."*
>
> (Colonel Artur. April 29, 1997).

Military conduct, disciplined bodies, this was the justification that the Colonel of the First Hour also gave to me in order to explain why he didn't follow the advice of the CNEN technician to go to Rio de Janeiro and receive proper treatment. He had to comply with the governor's orders and continue "*searching for and 'apprehending' persons and things contaminated by the cesium disaster.*" In his own

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words, "*I think my behavior was due to the training we received daily in the barracks and we take it in mentally* ." In sum, the major characteristic of the military identity of the soldier as a worker during the radiological emergency consists in this disciplinated body, constructed to obey orders and comply with military regulations.

8. BUILDING THE MILITARY BODY

Recent ethnographies in Brazil illustrate the characterization of the military body as constructed on the basis of hierarchical and disciplinary principles. Even though these studies refer to ethnographic contexts that differ from those of the "cesium policemen", the studies of Castro (1990) concerning cadets at the Military Academy of Agulhas Negras[62], and of Leiner (1995), with groups of Higher Officials of the Brazilian Armed Forces (Oficiais Superiores do Exército Brasileiro), provide elements that help us to situate the MPs in Goiânia. Both studies point to bodily discipline as a constitutive element of the "military body."

Castro's analysis about the constructive process of social identity in the military - the military spirit - demonstrates that the cadet passes through a process of professional socialization during which he is expected to learn values, attitudes and behavior patterns that are appropriate for military life. The definition of the *inner* world that differs from the *outer* world (1990: 38) implies a recognition of existing moral and

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62 *"The Academia Militar das Agulhas Negras* - AMAN (Military Academy of Agulhas Negras) *is the only higher education establishment responsible for basic information and instruction to Brazilian Armed Forces active officials. It has been located since 1944 in the municipality of Rezende in the state of Rio de Janeiro* (...) *and lies approximately 170 Km of the city of Rio de Janeiro* (...)" (Castro 1990: 9).

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physical attributes. These distinguish military personnel and make them recognizable even when they are not in uniform. In this manner, they learn through the *General Norms of Action (Normas Gerais de Ação)* that when dancing one must avoid ostentatious behavior, always maintaining distance from the absurd, or such activities which are incompatible with the seriousness of the uniformity and dignity of the military service. They should also cut their hair weekly, as beards or mustaches are off limits. There is incentive to participate in sports, because the athlete deserves special status. (Id: 19; 45-46).

Bodily discipline as a constitutive element of the "military body" also appears in Leiner's research:

> *"The researcher, when in the military environment, will note in the specific characteristics which compose the daily military transactions __ the salute, the formation, the formalism, the respect, the bodily rigidity, the impeccable uniform, the well-shaven face, the precise haircut, the speaking tone, the look, the upright walk __ those elements which, whe considered together, define a soldier, a platoon, a company, a battalion, a regiment and an army, as that which grounds self-definition in that which is obligatory in all acts: to be disciplined" (1995: 153).*

The separation between the *outer* world and the *inner* world is marked, in the case of the cadets at Agulhas Negras, by the *animal time (tempo dos bichos)* , in which the prank represents a rite of passage which delineates the rupture between two worlds, the civil and the military and the union among individuals who share common experiences (Castro 1990: 26-7; 30; 132). This animal time, which lasts a year, begins with a period of adaptation, and refers to the phase, which precedes the official

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registration and occurs within two to four weeks after arrival at the Academy. This period is reported by the cadets as one of intense physical and psychological pressure, of verbal humiliation and blind obedience. In the long run, this is just temporary, for according to the institutional structure of the school of the Brazilian military elite, the hierarchical distance among cadets and between the cadets as a group and the officers, is in the form of a hierarchical ladder.[63] In this way, with the passing of time, all will have the possibility to occupy positions of relative upper status.

This is not the lived hierarchy of the Military Police, characterized by "qualitative hierarchy"[64]. From the beginning, there is a situation of given and lasting unequal conditions, a structural line, that separates those who enter the corporation as enlisted recruits and those who are officers. This line will hardly be cross in the future, and it defines the group of policemen who will reach (or not) the supreme rank of colonel. The military police career is thus defined by a rigidly established segmentation into two professional groups: the enlisted recruits and the officers. Limits are defined by

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63 " ... *the distance between the hierarchical positions occupied by some will be, basically, an issue of "time quantity": the generals from today were cadets in 1945-55; the cadets from today will the generals from 2020 decade. In this sense, one may call the hierarchy of the officers group as "quantitative hierarchy", a hierarchy which presupposes that possibility of ascent for all members, departing from an initial situation of formal equality of conditions"* (Castro 1999: 22-23). My Translation of original text wrote in Portuguese.

64 Castro opposes to the "quantitative hierarchy", already defined, the hierarchy that he designates as "qualitative". He understands as "qualitative hierarchy", a system where the individuals occupy always the same position, without any possibility to climb to a higher rank. Since the beginning there is a situation of given unequal conditions (Castro 1990: 23).

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official requirements such as the need of a high school degree to apply for the School of Officials, where the first position is that of cadet, or an undergraduate degree to enter the group of officials without the need to begin as a cadet. Rank ascension depends on the completion of courses[65] which the soldiers should attend along with the accomplishment of their professional activities, as well as a "clean" service record. The soldiers should also stay in the same position for three years before ascending to the next one. Considering the fact that the majority of those who register to become military police have barely completed the equivalent of grammar school, it would take them 20 to 30 years to reach the rank of sergeant-major; therefore, most will never cross the line between "enlistees" and "officers." The education requirements are complicated by the organization of labor, which hinders the recruit from attending a conventional school. The need to augment his meager salary with jobs in the informal economy makes the task of rank ascension doubly tough.

In this manner, the Military Police institution in Brazil operates with a hierarchy of two groups: the "career men," represented by the officers, and those identified as "non-career men" constituted by the enlisted recruits. This segmentation between the officers and the enlistees establishes a distinction between the group that gives orders and administrates and those who simply execute such commands. This segmentation engenders also stigmatization because the officials perceive themselves as having more dignity than the "enlistees" and classify them as "rude" men. In this sense,

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65 Diplomas applied to the professional activities (high school diploma, completion of some college courses).

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the Military Police does not permit mobility as does the Military Academy of Agulha Negras[66], but rather it sets up an internal structural opposition (Dumont 1997; 1970).[67] That is to say that although the officers and the enlistees comprise a single group, the Military Police of the State of Goiás, each subgroup simultaneously distinguishes itself

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66 It is important to call attention also to the class distinction between the individuals entering the Military Police (MP) institution and the Military Academy of Agulhas Negras. The majority of persons entering the MP coming from working class, with low level of education and usually they go to this institution because they could not find a job elsewhere. By contrast, the individuals ingressing the Military Academy of Agulhas Negras belong to the upper or middle classes, attend good schools and belong to an elite both in terms of military and administratif commands.

67 *"...The element plays a part in the group, and it is in this sense that it is constitutive or identical. At the same time, the element distinguishes the group and it is opposed to it. This is what I have designated under the expression encompassment of the contrary"* (370). (My English translation of the text wrote in Portuguese from the Brazilian edition (1997) of Dumont's book).

I call attention at this point to the fact that in *Homo Hierarchicus*, Dumont, in the beginning, defines hierarchy as the principle of gradation of group elements in relation to the group as a whole. This implies a scale of order rather than one of opposition. This graded classification would not include the notions of power and authority. According to Dumont, in the majority of society, the religious perspective is that which supplies a more collective vision, ordering beings in reference to their degree of dignity. In this perspective, the military hierarchy from the perspective of modern common sense __ an order in which the inferior instances are in regular succession encompassed by the superior, would be in Dumont view an artificial construction of subordination, for it would imply authority and power. For Dumont, the notion of value is implicit in the concept of hierarchy. A certain consensus regarding values, a certain hierarchy of ideas, things and persons is indispensable to social life.

Later, and it is here where I refer the reader (the *Postscript* written in December 1978 (Dumont 1997) in the edition "Tel," Dumont refines his concept of hierarchy. In the conceptualization of the phrase "encompassment of the contrary," he includes the notion of opposition and exclusion present in the terms of hierarchical order. In this way he points to the existing contradiction in the very constitution of the hierarchical system as unity in segments, which both identify and exclude each other. The idea of inclusion and exclusion approximates and separates poles of the same unity. It is this aspect of the concept that I consider relevantly in the analysis of the case of hierarchy in the Military Police institution.

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and opposes itself to the other. The distinction between officers and the enlistees categorizes individuals according to qualities and attributes which from the beginning are different and will remain so. For that reason, this is not a hierarchical ladder but rather a "qualitative hierarchy".

The Goiânia disaster illustrates this internal structural opposition in two different ways. First, it was enlistees who obeyed the orders and went to the contaminated areas without even know what was happening. Later on, when in panic, their maintenance at the contaminated areas was assured by the codes of hierarchy as attested by Colonel Artur's narrative. Second, during my fieldwork I met three officials who declared themselves as being affected by the disaster and by the Colonel of the First Hour's recollection of how the radiation had affected his body. Nevertheless, those officials did not publicize their illness or join the 1997 police movement, suggesting that the separation between the two subgroups remains intact even in the context of distress. Thus, the title "cesium policemen" designates only the actions and recollections experienced by the enlistees. The internal structural opposition manifests itself also through the experience embedded in the concept of the disciplined body, which is expressed in daily police activities.

8.1. Dietary Habits, Behavioral Norms, Verbal Humiliation and Segmentation

This boundary between the groups is defined in daily interactions as well as through the different uses of physical space and behavioral norms. The dining halls

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are specific for each subgroup. The food is also different and the general treatment directed towards the enlistees can be characterized as constant humiliation. While the cadets at Agulhas Negras pass through *animal time* during their first year of the Academy, the experience of the incoming recruits in the Military Police, "animal treatment" in the real sense that total submission is the norm to be followed at all times even when they turn on soldiers.

One of the "cesium policemen" describes his perception of humiliation, pointing to elements of this hierarchical segmentation between enlistees and officers.

> *"In the police, the officers have a prejudice against the enlisted personnel. Everything is different. The food is different between the officers and the sergeants. Which is different from that of the soldiers. A corporal and a soldier eat the same stuff. So, it's like this, there is a hierarchy. The officers eat steak and receive complete set of utensils. When it comes to the individual soldier, you end up with the so-called dinosaur. You get cut up pieces of the fat neck of a cow or you get those huge bones. A horrible excuse for beef. Beans, you'd be hard pressed to find any. The rice is all sticky, a "papa".*[68] *Because, you know, the first rate rice goes to the officers. We get just a fork. You can check it out over there in the garbage can. It is full of food. No one eats anything. If you don't have enough money to buy something*

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68 The word "papa" is used in a double sense. First, it refers to the rice that was cooked so long that it turns into a kind of soup. Second, it means the Pope, in Portuguese "Papa".

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outside of the mess hall, you go hungry all day. They want to know about the power they got, don't they?

If we were to go over there and say: Hey! I'm sick, there's no way I can work today. They don't care at all. But, if it was an officer who was all sick, he just says: __ I got to go. And he simply leaves.

If they (the officers) *order us to go do something and it is impossible for us to actually do it, the way they want and everything, they don't want to hear about it. Take for instance the way it was over at the Temporary Radioactive Waste Repository, we walked in the rain from here to there. It was really cold there because of the high altitude. They used to say: __ No, you gotta go and do this,* ***a Soldier must overcome his environment.*** *This has always been inside the Military Police:* ***a Soldier must overcome his environment,*** *according to the officers anyway. They're just using us. We are just a machine, or an animal, which they let loose from time to time in the pasture. Out there we get soaked, sunburnt out in the pasture. If you stay out there, that's all right. It's the same thing for an enlisted soldier.*

You see my situation. I was already in pain. I didn't ask to be exempt from service. If you check my records, there is no dispensation signaled over there. Only when I was taken to the hospital for an operation. I didn't ask for someone to relieve me so that I wouldn't be humiliated. You see how it is, me talking to some officer about my problems and he not giving one ounce of attention. So what I used to do is: I was already in a lot of pain. So, I begged the guys to stop at a pharmacy. Just let me take a Voltarem. So I took these pills and I got some relief. I was good to go for about a half an hour. My headaches were super strong.

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> *Just so you can appreciate this, people in this state shouldn't have to go through such humiliation. The right to have one's health intact, health insurance __ this is part of the law. If we need to talk to the lieutenant, he tells you right up front:*
> *__ Give me ten. We have to drop and do ten pushups just to talk to the lieutenant. I was really taken aback when I entered into the military police. This isn't for me. It's an abuse of power"*
> (Soldier Carlos. April 8, 1997)

The distinctive mark between social groups with qualities and particular signs of dignity is configured, in the view of Carlos, by way of one's diet and the conventions of table etiquette: steak with proper utensils (officers) versus cow necks with spotty supply of utensils (enlistees). From this perspective, the officers are perceived to belong to the human category, civilized, in opposition to the enlistees who are identified as uncivilized, "grazing animals." The use of stylistic conventions as a way of representing social stratification was raised by Norbert Elias (1994 [1939]; 1978) in order to comment on the opposition between the aristocracy, bourgeoisie and the peasants in Europe during the 17th and 18th centuries. As a mark of social class, table gestures distinguished peasants from aristocrats. Even though there were few knives and forks, the aristocrats used them to cut and serve meat while the peasants stuck their hands in the sauce (1994: 70-71). In this way, manners were used to create social distance and to regulate social conduct.

The concept of civilization and its historical predecessor *Civilité*, as it is

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understood in the historical formation of French culture, is interpreted over time as hegemonic, minimizing the internal differences of France (e.g. the bourgeoisie adopt courtly manners) and subsequenly expressing Europe as a unity.[69] In this way, the process of civilization, conforms to the manner in which the French elite conducted themselves. The process manifests itself in the establishing of an ideal model to be

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69 In the analysis of this distinction between *Civilisation* (France) and *Kultur* (Germany), Elias argues that both are connected to national histories which forge such notions as socio-cultural constructions. The opposition between nobility and the bourgeoisie, in the second half of the 18th century, expressed linguistically and in the conventions of style, is configured differently in the case of these two countries. The notion of civilization expressed in the use of the French language and the established etiquette by the French court expands throughout Europe as synonymous with refined taste and indicative of superior individual manners. In Germany the *intelligentsia* of the middle classes developed the concept of self-expression and enclosed spaces of culture in the arts and sciences. With the ascension of the bourgeoisie, the values expressed by *Kultur* (including the very practice of modern German) become the image of the Nation. In the case of France, the opposite occurred: the bourgeoisie remained strictly connected to court traditions in their behavior and emotional control, even after the Revolution. The notion of Civilization, once an expression of internal conflict, becomes a synthesis of the nation and afterwards, with colonial expansion, of the values the West would spread throughout the "barbarous primitives."

Eric Wolf (1974[1964]) in his examination of U.S. Anthropologist's preference for the term *culture* __ as does the Germany __ to cover the phenomena of his interest, as against the terms *society* and *civilization* adopted Elias' distinction. The term Culture which took form in Germany and to German Social Sciences refers to *"the inner man," that emphasis on internal moral worth that underlies also the concept of true __ internal __ culture.* (...) *while civilization was regarded as mere outward show, mere exercise of technical skills"* (Id: 18). Wolf credits this U.S.' option to the strong German influence on American academic life in general, mainly before Word War I. But he claims also "*...similarities in the social conditions of Germany and the United States that may have predisposed them to the common utilization of the culture concept. America, like Germany, disdains what it conceives to be artificially and outer form; true being, here as there, is natural and is conceived to spring from the heart, On these shores, too, the sophisticated, hard, brilliant, unsentimental polish of manners __ which creates social distance as much as regulates social conduct __ has been rejected in favor of an informality of manners that welcomes all comers.* (...) *Perhaps, then, it was this stress on the informal and internal that made the German culture concept congenial to the Americans"* (Ibid.: 18-19).

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followed. With regard to the internal, the French bourgeoisie adopts courtly customs. In reference to the external level, the European colonial expansion takes these models of civilization to the everyday life of the inhabitants of the New World. These models are to be adopted in the transformation of the "barbarians" and "savages" into civilized peoples: religion (Roman Catholicism), the language of the *hônnetes gens* (French) and bodily culture.

These discussions about court culture and court manners on which the social fabric of "civilization" was to be structured in fact are informed by the assumptions that the hegemony of class and power relations manifest also through the symbolic reproduction (Wolf 1999: 21-67). It is the asymmetrical structure of society that determines the condition under which ideas are produced and propagated. In other words, there is an interactional process emerging from cultures and social process which produced social and cultural inequalities.[70] In the Brazil case, there has been a historical misrepresentation as well as symbolic and social cancel of those social and ethnic groups not belonging to the elite constituted by the descents of the European first colonizers. The representations of indigenous people already living at the New World before the European invasion; the cultures of African descent peoples who were traded as slaves, and the so called "popular culture" arising in the country side, all then have undertaken a systematically process of domination through ways of dequalification. The segmentation

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70 As in Yengoyan comments on Wolf's ideas " (...) *culture is fully embedded in power relations, nothing is neutral in modes of control, and, thus, social-structural relations are all marked by a differential defined by who controls what and who controls whom*" (2001:X).

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inside the military corporation, which surfaced through manners as well as through body representation, thus takes its roots into a class society with manifested ethnic discrimination. In this way, going to be "soldier", i.e., enlistees, is one of the few options for those whose access to material and symbolic resources were already restricted based on class and ethnic differentiations.

Some of the members of the "cesium policemen's" group were aware of this class distinction which motivated them to be members of the Worker's Party (*Partido dos Trabalhadores* - PT). Others perceived the work out of the local symbolic languages as the expression of the hierarchical segmentation inside the Military corporation, as illustrated in Soldier Carlos narratives, above quoted. Indeed, Soldier Carlos remarks on the separation between the officers and the enlisted personnel when he refers to the different parts of the cow which are offered as meals as well as the differentiation in eating utensils. To refer to the meat, utensils and the table manners as manifestations of the hierarchical system, Carlos uses the expression of the local idiom whose representations are superseded by the economic importance of farming and cattle raising[71] as well as by the ideals of the European court customs.[72] Carlos[73] actualizes in

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71 The colonial occupation of the territory of Goiás and its insertion into the world system in the 18th century was due to gold exploration as well as the enterprise of domination, extermination and/or expulsion of the native population. Even though cattle breeding were prohibited, because the Portuguese court was against the diversification of economic activities in the region, such enterprises have always existed. In Goiás cattle breeding was the second source of economy until 1812, when the mines were drained of their resources and gold thus lost its hegemony. Cattle raising consequently became the principal economic activity until the 1950s, the moment in which a new front of economic expansion was initiated named farming and cattle raising ("agropecuária"). In 1998, Goiás was ranked third nationally in terms of the production of beef. The symbolic expressions of the region are laden with the "cattle culture" found in places

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such as the Agropecuária Expositions. These bring together spaces of exhibition and sale of animals and agricultural equipment as well as artistic shows. Goiânia holds every May a national exhibition that lasts fifteen days. In 1995, the Goiânia Secretary of Economic Development presented to the City Town Council a project with the aspiration of transforming Goiânia into Brazil's Country Capital. Despite all this hoopla, many sectors of the population mobilized against this idea reminding the political representatives that such an effort would limit and essentialize the cultural plurality of the region in favor of an emphasis on solely "cattle culture." Thus, the project was filed away. (Campos 1998; Coelho 1997; Moreyra 1982; Saint-Hilaire 1975; *Economia e Desenvolvimento* 2000; Silva 1998).

72 The presence of the European court takes place in Goiás territory with the installation of the captainship of Goiás in 1749 and the designation of its first governor D. Marcos de Noronha, Conde dos Arcos (Count of Arches). With the relocation of the Portuguese Court to Rio de Janeiro in 1808, due to the invasion of Napoleonic troops into Portugal, the customs of the nobility consolidated the idea of refinement / civilization connected to aristocracy in opposition to the perceived brutal nature of the native population. The court's presence effected a radical change in the habits of those in the colony. Firstly, there were acts such as the opening of the harbors and the creation of the Régia printing press (1808). In addition, the first newspaper publication in the country very much altered the daily life of the province. Soon thereafter the arrival of the French Artistic Mission, responsible for the First National Salon of Fine Arts (Primeiro Salão Nacional de Belas-Artes), solidified in Brazil the relation between stylistic conventions and class distinctions. In this manner during the 19th century, the children of elite families in Goiás were educated in the court located in Rio de Janeiro and thereafter in France and Portugal. Upon their return to Goiás, the lads now married to sophisticated young women of the court, associated local customs with mournful, timid, shabby and simpleton ways. These stood in opposition to the acquired habits within the tradition of nobility. The writer Machado de Assis (1974 [1873]), in one of his short stories, describes the perception of the son of a 19th century Commandor about the culinary habits of Goiás after staying eight years studying in France: "What a difference between the dinners of *restaurants* of the *boulevards* and that sloppy bean dish in some miserable __ roadside joint __ without the tidbits of French cooking, without the accompanying reading of the *Figaro* or the *Gazette des Tribunaux* !" In this sense, within the local imaginary, table manners including the dinnerware are historically imbricated in class distinction and the opposition between members of the elite and the marginalized populace.

73 The meat itself is also an important element in his life story, for being the son of a butcher, it was his father who brought home the essential food for the family's nutrition: the meat. Brandão's (1981: 105) work on the peasants of the Goiás region points out that cow meat together with rice, beans, manioc, potatoes and pasta are

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his speaking the class divisions that emerged historically during the colonial period and which are the results of the economic and cultural formation that inserted the region of Goiás into the world system. In the daily life of the local population, meat from cows is classified as "first rate" and "second rate" differentiating individuals according to their purchasing power. In this way, the parts of the cow, used as symbolic discourse, are configured as a metaphor, through which the local society talks about the social quality of a particular person. In the case of the Military Police, the metaphor indexes the place of each unit within the institutional totality. The enlistees, in their daily contact with the officers, interpret the acceptance of humiliation as constitutive of their institutional identity.

8.2. Military Daily Activities and the Marks of Virility

By way of the qualitative hierarchy that exists in the Military Police, the enlisted recruits learn that they need to control physical pain and to continue carrying out assigned tasks, whether or not the weather is excruciatingly hot or heavy with rain. In the end, the *soldier must overcome his environment.* In the daily life of the regiment, the athlete's body, the virile body, rough and ready and built through numerous physical exercises, cannot show any signs of weakness that would elicit the banter of his colleagues and humiliation from his superiors:

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classified as "food," __ a massa __ ("the integral meal") in opposition to a "mixture" understood as "that which accompanies": vegetables, greens, salads.

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> *"One time, a sergeant-major caught a soldier napping while on guard at the Waste Repository. It was already late at night. He woke up everyone who was lying down. He punished everyone: the "rala." It had just rained. You see? It had washed those containers of waste. The water washed the canvass* (that covered the containers) *and seeing that the area was at an incline, the water had puddled up near the reservoir. And we crawled __ cuz in the "rala" everyone has got to get down, you hear what I'm saying? __ crawl by one's elbows. There were twenty of us. So that recruit, Joaquim, he wasn't keeping up. The sergeant-major then yelled out: little girl! You must be having your period! You're on the rag! You gay boy! Hey! Boy! go put on your dress. You ain't nothing. You ain't man enough to do the "rala". **The soldier must overcome his environment!"***
>
> (Soldier Carlos. April 8, 1997).

The imposition of the hegemonic model of masculinity[74] is carried out by the commanders vis-à-vis the feminization of the subordinates[75] who oppose the military ideal of physical self-discipline and emotional control. In this manner the incapacity to

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74 Almeida (1995; 1996) argues that the diversity of experience and identities of men indicates that various masculinities exist: hegemonic and subordinate ones. The hegemonic masculinity is understood as (...) "*an ideal cultural model that, not being attainable __ in practice nor in a conscious and fixed form __ by any man, exerts a controlling effect over all men and women*" (1996: 163). (My Translation of original text wrote in Portuguese.)The subordinate masculinities are contained by the hegemonic as potentialities often perceived as a danger which must be controlled, e.g., the case of the homosexual danger. The mobility of the relation among masculinity, man and power speaks to the necessity to analyze the daily negotiation between hegemonic and subaltern masculinities.

75 The association between men and images or instruments of power follow

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conform to a physical punishment __ the "*rala* " __ equals the sickness of a woman in menstruation. Therefore, the professional identity of the soldier is constructed in parallel fashion with the elimination of personal experiences and no respect for individuals limitations on their ability.

The notion of labor also involves the idea of the heroic body of the policeman in everyday confrontations with a criminal. Carlos, now ill and located in the reserves, remembers the moments of risk that he had confronted which brought him the high regard of the commander:

> *"The bank alarm went off, we were the first to arrive. We were always in pairs, under cover on motorcycles. One guy went in, and another waited outside. If he didn't come out in 30 or 40 seconds, it meant the deal was going down. Then the getaway cars sped out super quickly.* (...) *Yeah, I have been in danger before. It's a pleasure for me, you got me? Saying that the first imprisonment of Leonardo Pareja* [76] *was due to us, P2:* [77] *me,*

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a "commodity logic" (Strathern 1988) which is typical of capitalist formations. "*The (masculinized) power is associated with those that control resources and who have interest in naturalizing and perpetuating this control, including this capacity to feminize subordinates*" (Almeida 1996: 171).

76 Leonardo Rodrigues Pareja, robber and kidnapper, became known publicly for his daring actions and by his challenging attitudes towards the police in his Hollywoodesque escapes. In 1996, just 22 years old, he was at the head lines of Brazilian media for leading a group of 40 prisoners to freedom. These prisoners had revolted in the Centro Penitenciário Agro Industrial de Goiás - CEPAIGO (Agro-Industry Penitentiary Center of Goiás). This action was initiated when the prisoners took 25 visitors hostage. Of these persons, 10 were judges, the secretary of Public Security of the State of Goiás (Segurança Pública do Estado de Goiás) and various reporters. After six days of negotiation, the group of prisoners received cars, cellular phones, heavy ammunition and $20,400 in exchange for the release of the hostages. They left the

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> *Corporal Josué and Soldier Silva. It was when he* (Pareja) *was robbing gas stations. There was him, some guy named Elvis. There was Marquinho. They arrived in front of Buriti Shopping Mall __ they lived that area __ I went to Marquinho's house to wait for them. It was just me inside their house, waiting... It was like that. And there was the case of the assault on Caixa Econômica Federal* (national bank) *where we were exchanging fire, over there in Bela Vista* (neighborhood). *I was in a shootout with a real bandit.*
>
> *(...) Look, at the time I wasn't scared, because a policeman, when he leaves his home, he just thinks like: kill or be killed. Every policeman thinks this way. In these moments we don't remember things like family. We don't even remember... nothing. It's all about doing your duty"*
>
> (Soldier Carlos. April 8, 1997).

The notion of labor in the police force is permeated by the code of virility that involves elements of risk and sacrifice. The comparison with secret agent 007 recurs in the imagination of many policemen as in the quoted case of Sergeant Alexandre, one of the "cesium policemen" who wrote his name next to the inscription of 007 on his

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prison with six hostages. Thc escape was aired nationally on television. For this reason, the participation of the military police in the prison scene of Leonardo Pareja was recognized with respect and interpreted as a heroic act. ("Pareja dá as ordens". Newspaper *Diário de Manhã*, March 1996 ; "Primeiros Reféns Deixam CEPAIGO". Newspaper *O Popular*, March 1996; "Presos Fogem com 6 Reféns após 151 Horas". Newspaper *A Folha de São Paulo*, April 1996).

77 P2 is the Secret Force of the Military Police (Serviço Reservado da Polícia Militar) whose activities are to discover illicit acts committed by members of the police force itself such as robbery and gang participation. The MP members work under-cover.

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overalls. The model of masculinity so idealized by the policemen, emerges here. The good soldier is the one who receives decorations by merit, which shows that he has done his duty with heroism, courage and dignity. This is the disciplined body built to chase after criminals, exchange fire with bank robbers, work with caution, protect the public and private patrimony and maintain order. In the end, isn't this what the police do?

9. GIVING VOICE TO THE DISTRESS: CONFRONTATION WITH THE DISCIPLINED BODY

> *"The Temporary Repository was already installed. Then one day ... Soldier Teixeira was on guard, then he saw a bright flash. Then he came down whooping and hollering that he had seen a ghost. Only a couple of days passed by when Joaquim, who is now over there in the psychiatric ward, he was walking towards the lodge and he saw someone trailing him. He stopped and looked. It was someone with a hood, it was raining. He looked again, and there was nobody there. He arrived at the lodge horrified. We checked out the entire repository area. We found nothing. After that, there was soldier Andrade who shot at the guard post door. He said there was something knocking on the door. He went over to the door and saw someone below. Asked for identification and the guy didn't show anything. Andrade picked up the machine gun and fired off a round. This all happened over there on guard post number four. (...) Many soldiers got stir crazy at their posts. They saw strange lights over there... in the containers. Folks interested in UFOs came here.*

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They said this waste depository is a prime location to have such visions"

(Soldier Carlos. Interviews done on April 8 and April 14, 1997).

* * *

"And when I met my husband (Sergeant Alexandre) *what really got my attention, what I say to him even until today, was his body. That's what I tell him until today:*

__ The thing that I was most attracted to was your legs, your body. He wasn't this skinny thing you see here today. He was a strong man. He had a man's chest, the kind a woman likes, you hear what I'm saying? He was a confident person. Happy. He used to go to the club and play soccer. He was completely different from what he's like today. Because his physique, the body that he had before was very different. I think it's already from the cesium, you know? Because he is really young. Just like what a friend of him said to me:

__ As time passes, one of the years, the cesium is gonna catch up with you. The people who died immediately, for them the cesium got them in one fell swoop. But those folks who didn't touch the cesium outright, but who walked around in those places, after some time the cesium starts to get into the body."

(Flora. Sergeant Alexandre's wife. Interviewed on April 4, 1997).

* * *

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> *"I dream all the time about the depository. I don't want to think about it, no. But, sometimes when I realize that I'm dreaming I suddenly realize I'm dreaming about it. But it's not even really like how the depository was in truth. It's with dead people in it. With big industrial metal barrels (used for storing the radioactive waste) that exploded. That horrible big sound. Then the lid came off and people came tumbling out, you hear me? And I'm lying there dreaming. Another time, there was a cemetery in my dream, ok? I remember that the people who died from cesium-137 were in this cemetery. I don't know if it's because all the stuff we had to deal with in that depository or what, the people nowadays talk about how crazy the policemen are."*
> (Sergeant Alexandre. March 26, 1997)

The feelings of fear and panic arising from their perception of labor performed in a risky radioactive site, without adequate protection, have transformed themselves into nightmares and nightly insomnia for many "cesium policemen." The experience of an uncertain future has invaded the life of these professionals and their families. Frustrated and anguished, they have not found any answers to the numerous issues concerning the deterioration of their bodies over the years. Sergeant Alexandre and Soldier Carlos told me of various attempts at suicide. Their sense of living a risky experience because of a professional activity has been accompanied by a feeling of being cheated[78] by their superiors and by the nuclear experts. On the one hand, they obeyed

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78 This feeling has come through in the narratives and outbursts of crying during some of the interviews that I have conducted.

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orders from their commanders whom they entrusted to know how to behave. They were also obliged by the regulations of military discipline to execute tasks that they feared and doubted. On the other hand, the nuclear experts failed to inform the non-nuclear workers, facing the radiation, about radiological safety. In this sense, to be cheated or hoodwinked leads to mistrust in the face of actions undertaken by the Military Police Command (Comando da Polícia Militar), who is in a subordinate position to the Governor of the State of Goiás, and to the governmental institution CNEN.

In addition, the feelings of being cheated result from the failure of the Military Police institution to honor financial and labor compensation to the MPs brought from their original battalions to join the Independent Company of Special Police and Environment Control (Companhia Independente de Policiamento Especial e Controle Ambiental - CIPOLICE). The state's governor created this organization on October 19, 1987[79] in order to provide protection and security, indispensable to environmental control of the special areas considered contaminated by radioactive elements. In the beginning, the Company consisted of 11 officers and 329 soldiers, including transfers from other battalions. In accordance with the Military Police Information Bulletins, with the creation of CIPOLICE, it was decided that 40 percent of ordinary soldier's pay will be added to the salary of those joining the newborn battalion. Also, other benefits according to military rank would be granted. In addition, medical leave for reasons associated with the radiological disaster in terms of related causes or effects would be

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79 CIPOLICE was created by the Decree n°. 2,846 of October 19, 1987. (POLÍCIA MILITAR DO ESTADO DE GOIÁS. BI (Newsletter) 002/87 from 11/03/87, containing transcriptions of BG (General Report) n°. 197, dated October 22, 1997).

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granted. (MP. BI - 002/87 of 11/03/87). According to some reports, service in the CIPOLICE would count as double time for retirement purposes. There were also supposed to be three vacation periods per year. However, these measures of compensation were only carried out in the beginning of the Company's existence.

As time passed, some illnesses that the "cesium policemen" describe as "strange" began to affect them. When in pain, they had to confront a situation of precarious and delayed medical attention. Beyond this, the testimonies I collected point to the discrimination faced by those policemen who worked in the radioactive areas or in the Radioactive Waste Repository. The illnesses that one group began to associate with cesium-137 did not receive the necessary attention in terms of investigation and research by the medical team at the Military Police Hospital (Hospital da Polícia Militar - HPM). For many, the illnesses increased and their salary was not sufficient to treat these new physical conditions.[80]

Questions without answers, the lack of support by the military organization, the precariousness of the official health system, the low salary, the desperate situation of not being able to secure personal or family medical treatment, the failure to hold promises made during the creation of CIPOLICE are just some of the

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80 In order to have a notion of the average soldier's salary, let us take Soldier Carlos as an example. As a retired military man, he received the equivalent of $ 300 US dollars. He spent approximately $38 monthly on medicine. His family consists of himself, his wife and two children under ten years of age. The wife added to the domestic budget working in the informal labor market in Avon beauty supplies sales. Every fifteen days she earned $ 28 dollars. Carlos' parents lived in a house built on the same lot as Carlos' family. His father contributed meat and green vegetables for the family's daily meals.

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elements which contribute to the move many policemen have made in searching for medical answers outside of the military based upon the egalitarian ideology of citizenship rights. In other words, the anxieties of the policemen no longer fit into the hierarchy of military discipline. It is in this public exposition of the failure of the hierarchical system, one that did not provide support to those policemen who served according to the model of the disciplined body in which the policemen confront two codes. On one side, the Regiment[81] of the Military Police of the State of Goiás (RDPMGO) normalizes MP action and constructs the notion of the military person[82] within a holistic / hierarchical system - the military institution. On the other side, norms based on the notion of equality and freedom,[83] basic to the ideology of individualism, finds support in the

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81 The internal regulations of Brazilian military police date from the Estado Novo period (during the dictatorship between 1937-1945 under the leadership of Getúlio Dorneles Vargas) and are considered totally inadequate for the present functions of regular police duty. This is the opinion, for instance, of the political scientist Paulo Sérgio Pinheiro, the coordinator of the Núcleo de Estudos da Violência (Center of Violence Studies) at the University of São Paulo. (Newspaper *A Folha de São Paulo* July 6, 1997).

82 I understand the notion of person as a social mask, that through rituals, transforms the empirical individual into a social being. In the case of a military person, I am referring to the 'fabrication marks' of the disciplined body (already explicated above) such as the walk, the haircut, the physical posture, the sense of belonging to a hierarchical segment which transforms the civil into military vis-à-vis ritualistic forms.

83 According to Dumont, modern society prescribes for us the need to be free and the idea of the Individual is understood as the Individual-Value. *"The ideal of liberty and equality follows immediately from the conception of man as an individual. In effect, if the whole of humanity is deemed present in each man, then each man should be free and all men are equal. This is the foundation of the two great ideals of the modern age"* (Dumont 1970 [1966]: 11; 1997: 59-60). Traditional societies, on the contrary, ignore Freedom and Equality as Values and rather articulate themselves around the collective idea of man and the notion of complimentarity, applying, first and foremost

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Brazilian Federal Constitution (Constituição Federal).[84] The principle expressed in the phrase "each one in his place" [85] is confronted in the public arena when the "cesium policemen" claim connections between illness / radiation / work in terms of cause and effect. The public exposition of the sick body, the confrontation with the hierarchical system and the search for human rights as professionals / citizens engender the social drama[86] in which these policemen live.

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according to the author, the principles of order and hierarchy. In this manner, modern western individualism would contrast with traditional holism. (Duarte 1986: 35-58).

84 The Constitution of the Federal Republic of Brazil, published on October 5, 1988, after a period of military dictatorship, created new individual, collective and social rights and directed attention to labor rights. For example, Chapter II, SOCIAL RIGHTS, Article 6, affirms that: *"There are rights of social import, education, health, labor, leisure, security, social security, motherhood and childhood protections, assistance of the abandoned, in the form of this Constitution."* And in Article 7, excerpt XXII: *"reduction of occupational risks, by means of health, hygiene and security norms."*
My Translation of original text written in Portuguese.

85 Da Matta, in his definition of the essential traits of the Brazilian character, as people as well as Nation, asserts that the "Brazilian society" is situated between hierarchy and individualism. In his analysis, he makes use of statements such as: "each one in his place" and "Do you know who you're talking to?". These expressions suggest for this author "*the ritualized and almost always dramatized reflex of social separation which places us far away from the 'malandro' (the hustler figure) and his survival resources. Thus, the phrase 'do you know who you're talking to' is a negation of the 'jeitinho,' the 'cordial nature' and the 'malandragem', these traces that are always recuperated in order to define, as in the case of Sérgio Buarque de Holanda (1973), our way of being (Brazilian) and even as Antonio Cândido (1970) remarked, our literature nascent mark.*" (Da Matta 1983 [1979]: 140).
(My translation of original text written in Portuguese).

86 Victor Turner called social dramas a type of conflict which manifests itself in public episodes of tension eruption. "(...) *When the interests and attitudes of groups and individuals stood in obvious opposition, social dramas did seem to me to constitute isolable and minutely describable units of social process.* (...) *Social dramas,*

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The other structural element of the social drama is found in the lived experiences of the non-virile, emaciated body, an experience of the masculine, which are juxtaposed to those of hegemonic masculinity, the model of the heroic body constructed in the military police. Emotional expressions of pain and distress, the revelation about the visions of walking ghosts at the waste repository, convey a loss of self-control,[87] the fundamental element of "masculine body". The public display of these emotions and the emaciation of the virile body reveal a weakness. It calls into question the codes of virility and respect which guide domestic relationships as well those relations forged in the military organization. As an expression of this drama, for example, Sergeant Alexandre, who before the disaster felt like a "debonair man" and a "hunk," realizes that he has been reduced to a formless "carcass"; his wife no longer holds any admiration for

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then , are units of aharmonic or disharmonic process, arising in conflict situations. (Turner 1974: 3; 37).

87 Kimmel (1998) 's study of the historical emergence of the masculinity hegemonic version in the United States argues that the model which surfaced in the first part of the 19th century, that of the *Self-Made Man*, characterized as an "anxious masculinity," required constant demonstration. He points to self-control and the devaluation of other masculinity forms as two of the three basic standards of proof by which the hegemonic model was formed. Through bodily self-control, men presented themselves as strong, tough and virile and classified other representations such as the Gentle Patriarch, one configuration present at the end of 18th century, as "queer."

In the case of masculine initiation rituals in the Xavante societies of Central Brazil and the Kuikúro of the High Xingu region, bodily self-control to overcome the fasting period, the body piercing, the body scratching and the sexual desire are considered constitutive of the hegemonic masculinity. (My comments were based on Maybury-Lewis (1984) and Verani (1994) data.)

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this "skinny thing"; his colleagues at the barracks greet him singing a song which directly refers to the feminization of the masculine: "... *It's the Liriche* [88] *dance! It's the Liriche dance! It's Lira in the middle of a cesium bomb making a sandwich".*

The dynamic of this social drama (Victor Turner)[89] which acquired public dimension in 1997, [90] gestures towards a series of events. At the same time, the conflict about the representations and experiences of the body points to a revision of Foucault's assertion about the disciplinary power of the body [91] as a single locus for power /

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88 The word Liriche is composed from two other words: Lira (how Sergeant Alexandre was known around the barracks) and Bichiche (things that queer, homosexual men do).

89 "*Typically, they (social dramas) have four main phases of public action, accessible to observations. These are: 1 Breach of regular, non-governmental social relations occur between persons or groups within the same system of social relations,* (...) 2. *Following breach of regular, non-governmental social relations, a phase of mounting crisis supervenes,* (...) 3. *Redressive action. In order to limit the spread of crisis, certain adjustive and redressive structurally representative members of the disturbed social system.* (...) 4. *The final phase I distinguished consists either of the reintegration of the disturbed social group or of the social recognition and legimitization of irreparable schism between the contesting parties* (...)" (Turner 1974: 37-41).

90 In 1988, eight months after the disaster, enlistees and sergeants of the Firemen Brigade had already publicly connected their sicknesses and irritation with the fact of having worked in the disaster area. During this period, seven firemen who helped in the removal of radioactive material revealed through the media that they have been sexually impotent since that period. The significant difference between those events in 1988 and the publicity in 1997 is the issues of amplitude of expression. Such exposure was still relatively timid in 1988 (Newspaper *Correio Brasiliense* May 22, 1988).

91 Foucault argues that the body is appropriated by the disciplinary regimes which are exercised among others by institutions like school, hospital, military quarters, city, family. In this sense, Foucault discusses the surge of micro-power structures, which through these institutions act on the daily lives of individuals. He thus dislodges the centrality of state power and locates this force in a larger field, the space of capillary powers. For him, power over the body does not only index repression but is also a

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domination. When the "cesium policemen" bring to the public arena their painful body they also carry with them this image the questioning of the disciplined / hierarchical body. In this way, the body shifts from an instrument and a demonstration of domination to a visible site where conflict and resistance take place.

1) The breaking of norms:

In the early moments of experiencing the public drama, the "cesium policemen" utilized the local media as a channel to express their vindication. They uncovered and displayed sick bodies in newspaper photographs and television images: shaved heads resulting from malignant tumor surgery done on the brain; hair loss from radiotherapy; bodily discolorations. In addition, they exposed to the media the radiographs and other exams taken during this investigative process of the cause of their diseases. Yet, by revealing themselves and all of this information, including photographs of themselves in military uniform, without the expressed authorization from the commanders, they explicitly broke the established norms of the Military Police Regiment of the State of Goiás (RDPMGO): *"I have given these interviews, appeared in my uniform and I want to make it clear that...that...I worked in uniform, so why would I take a civilian photo* (for such an occasion)?" (Sergeant Alexandre).

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source of knowledge. It is in this form that the rise of the hospital in the middle of the 18th century connects to what he calls body investigation. On the other hand, this posture also facilitated a greater physiological and organic knowledge of the disciplinated body. (Foucault 1986: 99-111; 145-152).

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2) Crisis escalation:

Afterwards, the Corporals and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units (ACS), in the person of the vice-president Corporal Valdir Martins da Silva, took on the struggle of these isolated voices. He made overt gestures towards organizing debates involving the Goiânia Town Council (Câmara Municipal de Goiânia)[92] and the Legislative Assembly of the State of Goiás (Assembléia Legislativa do Estado de Goiás)[93]. The social networks increase, alliances were formed and the conflict, which was once simply restricted to the opposition between the MP Command and the "cesium policemen," drew in new social actors. The debate polarized around two principal issues: 1) there is no relationship between the radiation and the distress *versus* 2) the illnesses are the consequence of the work done in the contaminated areas and thus the individual as citizen has a right to medical assistance.

Representatives from FUNLEIDE (Leide das Neves Ferreira Foundation) and CNEN entered the controversy on the local level. On one side, the CNEN representative affirmed during these public debates that these workers' illnesses were not caused by radiological disaster because the activities the persons were involved in were military in nature and not connected to the nuclear professions. In other words, the

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92 I am referring to the Special Sessions which took place on March 19, 1997 and April 18, 1997.

93 I refer the reader to the Debate Forum entitled "Efeitos do Césio-137 ao Meio Ambiente e a Pessoa Humana) (*"Effects of Cesium-137 on the Environment and Human Beings"*), which took place on May 7, 1997. The solicitation of the Special Session was done through Deputy Nei Percussor, MP Corporal.

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representative simply related police work to military identity and denied any sort of articulation between the military, professional activities and the emergency. In the mind of the CNEN representative, the military personnel worked within the limits of acceptable radiation dosage applied to the public, thus it was not plausible that they were contaminated / exposed as consequence of occupational risk. On the other side, the president of FUNLEIDE stated that he could not attend to these policemen because the specified population of patients was restricted to the officially classified "victims of the disaster": [94] - the "radioacidentados" (contaminated patients).

The police vindications, for their part, found support from the parliament members of the Worker's Party (Partido dos Trabalhadores - PT) together with members of the Human Rights Commissions at the Goiânia Town Council (Câmara dos Vereadores), at local level, as well as at the national level, in the House of Representatives (Câmara dos Deputados) in the nation's capital of Brasília. The major claim concerns the necessity of an international commission of independent specialists to evaluate the police situation. Consequently, once the results had been determined, there

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94 According to the testimony of Soldier Carlos during the Special Session hold at the Goiânia House of Representatives on April 18, 1997, Soldier Gaspar Alves da Silva, one of the "cesium policemen," was prohibited from entering FUNLEIDE, where some years ago he worked as guard, after he went there for treatment. This fact contradicts the objectives of FUNLEIDE, for this professional is part of the group officially considered "victims of the disaster". He is integrated in Group III and therefore has the right to have his health properly monitored and treated in this institution. It is important to remind the reader at this juncture that Da Silva is one of the few military personnel on the Official List. In this document, it is made evident that he worked as a guard of the Public Hygiene Control Unit, during the disaster emergency. (FUNDAÇÃO LEIDE DAS NEVES FERREIRA. Official List of Group III [519 patients]. P.9).

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would be a guarantee of health care. The parliamentary members believed that the debate should leave the local scene and be fully exposed on a national level, providing publicity to a federal audience at the National Congress in Brasília.

The CNEN was preoccupied with the repercussion of these accusations and declarations regarding the police case of contamination. Especially during the months preceding the inauguration of the Regional Center of Nuclear Sciences (Centro Regional de Ciências Nucleares),[95] which houses the Permanent Radioactive Waste Repository (Depósito Definitivo de Rejeitos Radioativos). Thus, CNEN representatives participated in these debates in attempting to disprove any causal relationship between the MPs claimed illnesses and the radiation.

> " (...) *there is an extreme mystification occurring here in relation to the worn clothes and the idea of protective wear. No, these clothes don't protect.*
> (...) *the policemen weren't supposed to wear these sort of clothes because their function had nothing to do with the radiation. We worked inside the contaminated areas, the MPs took care of areas whose radiation doses were safe for the general public. The dosage of radiation was that which is defined for the public. They stayed on the outside of the limit defined for nuclear workers, they were not susceptible to dangerous conditions and didn't performed the tasks like those which the CNEN technicians faced."*
> (Alfredo Tranjan Filho in his intervention during the Session of the State of Goiás Legislative Assembly on May 7, 1997).

In the CNEN perspective, these reports concerning illnesses from radiation

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95 The inauguration took place on June 5, 1997, the day known internationally as Environment Day.

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needed to be contained, for such news could jeopardize the so-called Goiânia Project.[96] This project involves a CNEN plan which aims to secure public acceptance of the Permanent Radioactive Waste Repository, in the town of Abadia, Goiás. From this perspective, CNEN summons up[97] the nuclear experts' system. A commission of five physicians [98] was organized. The CNEN representative highlights the independence of these doctors during the special session of the Legislative Assembly of the State of Goiás (minutes from the Debate Forum entitled "Efeitos do Césio-137 ao Meio Ambiente e a Pessoa Humana" - "Effects of Cesium-137 on the Environment and Human Beings." - May 7, 1997 [99]). Nevertheless, as members of the disaster experts team they are aligned with the State and perform a political and normative role. Three of these doctors were

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96 For more information on the Goiânia Project, see Tranjan and Rabelo 1997: 4.

97 The district manager of CNEN in Goiás attests in a statement to the media that the initiative to invite specialists was the idea of CNEN itself in the sense that this institution never received any formal solicitation by the ACS for such a measure to be explored. ("Para CNEN Males são Ocupcionais". Newspaper *O Popular*. May 3, 1997).

98 The commission consisted of doctors Nelson José de Lima Valverde (in 1997, doctor at Furnas Centrais Elétricas and Reference Coordinator of Radiation Victims at the State University of Rio de Janeiro; in 1987 he was affiliated with FURNAS), Carlos Eduardo Brandão de Mello (in 1997, affiliated with the Federal University of Rio de Janeiro; 1987 worked at the Instituto de Radioproteção e Dosimetria - IRD/CNEN (Institute of Radioprotection and Dosimetry); Rosana Farina (in 1997, affiliated with the Cancer National Institute; in 1987 voluntary helper during the emergency phase of the disaster, later being employed by CNEN); José Ferreira Silva and José William de Oliveira, FUNLEIDE doctors.

99 The debate was requested by Deputy Nei Dias Percussor, Corporal in the Military Police and ex-president of the Corporals and Enlisted Personnel Association of the State of Goiás Military Police and Firefighting Units.

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from CNEN at the time of the disaster and two are employees of the Leide das Neves Ferreira Foundation and thus workers for the State of Goiás Government.

This commission administered medical exams to 114 MPs during two days under very tense circumstances. The local newspapers reported on their front pages that the Health Director of the Military Police Hospital - where the policemen were examined - assaulted one of the "cesium policemen". The atmosphere was becoming emotionally charged. Some acts contributed to intensify the social drama: the beating of the policeman / "victim"; the perceived superficial approach undertaken by the team of experts and the attempt to confine one of the leaders of the MPs in a Mental Health Ward. At this point, I was already deeply involved in the case of the policemen's daily suffering and desperate search for answers. The policemen constantly tried to make contact with me and when I was not allowed to attend the more restricted meetings, they provided me with the pertinent information afterwards. Considering the desperate situation of these men, caused by the physical aggression and by the attempt at to incarcerate one soldier, I recognized my alliance with them at that moment, and wrote an article [100] for the major Goiânia newspaper whose text is reprinted in the aforementioned Debate Forum of the Legislative Assembly as part of a Councilman[101] speech.

The experts team of specialists worked during April 28 and 29, and on

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100 "Descontaminando Goiânia das Lembranças do Césio-137". Newspaper *O Popular*. May 5, 1997.

101 The same Councilman who requested the Legislative Assembly Special Session.

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May 1st they signed a "Preliminary Notice" ("Nota Preliminar") which was announced to the press, but the documentation of which was not officially directed to the ACS. It was stated that a Definitive Report would be formulated and delivered to the CNEN president, José Mauro Esteves and to the Commanding General of the Military Police in Goiás, Colonel Henrique de Sousa Lima. In the preliminary notice, the specialists claimed that:

> *"In light of detailed patient reports and careful clinical exams, the designated specialists did not detect in any of those examined:*
>
> . *past complaints conforming to severe radiation diseases caused by the Goiânia Radiological Accident of 1987;*
> . *past complaints or manifestations conforming to localized radiolesions caused by the Goiânia Radiological Accident of 1987;*
> . *current manifestations that could be attributed to late effects of cesium -137 exposure."*
> (Valverde, N.J. de L., et.al. Nota Preliminar (Preliminary Notice). May 1, 1997a).

The manager of CNEN in Goiás, Paulo Nei Rabelo stated in the press that among the related illnesses reported by the doctors, the most usual were migraines, arterial hypertension, muscular strain and backaches, which were caused by the MPs' extended time on their feet. As he stated: " *These are common and occupational diseases, some are characteristics of military activity itself.*" [102] Once again, the professional identity of the military laborer is perceived by the nuclear expert to be part of the "ordinary functions" and tasks performed by the "cesium policemen" in an

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102 "Para CNEN, Males são Ocupacionais." Newspaper *O Popular*. May 3, 1997.

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emergency and is not related to the possibility of an occupational disease associated with radiation.

The preliminary report of the experts surprised the "cesium policemen" and the vice-president of the ACS who insisted that there were many grave cases of ill men who worked without appropriate protection equipment to guard against radioactive waste soon after the accident was discovered.

3) Redressive action:

The final evaluation of the experts' team to be presented in an official report and directed to the pertinent authorities did not happen quickly as promised. Towards the end of June, 1997, almost two months after the release of the preliminary notice by the medical commission, this official report, according to the press, had not yet been delivered to the president of the CNEN.[103] In my opinion, this delay was a planned strategy, characteristic of institutional protocol in crisis management. There is a double objective: 1) cause the "cesium policemen" movement to stagnate"; 2) to not let this suspicion of illness and contamination interfere with the planning of the inauguration of the Centro Regional de Ciências Nucleares da Região Centro-Oeste (Nuclear Sciences Regional Center of the Central-West Region) which houses the Permanent Radioactive Waste Repository. The wait soothes the present dynamic of tension and conflict, for

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103 On June 27, the newspaper O Popular announced that the report would be released in the following days but the results would only be known after the official delivery to the CNEN president. ("Sai Logo o Laudo sobre os PM's". Newspaper *O Popular*. June 27, 1997).

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without any sort of official document, the ACS cannot take any further concrete steps in contesting the state of affairs. The delay also deflects the media from more engagement with negative declarations from the policemen as well as more exposure to the diseased bodies and calls attention to the construction of the Permanent Depository. This emphasizes the idea that the disaster has been accounted for - filed away as history.

Tired of waiting for the release of the official report, the policemen returned to the issue of the work / radiation / illness and brought the subject to the sphere of the Social and Family Security Commission[104] (Comissão de Seguridade Social e Família) of the House of Representatives in Brasília. During the "Public Hearing" [105]

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104 The"Public Hearing" was solicited by the Deputies of the Partido Comunista do Brasil - PC do B (Communist Party of the Brazil): Jandira Feghali (State of Rio de Janeiro) and Aldo Arantes (State of Goiás). The following were summoned to appear and give testimony: Vasco Martins Cardoso (Physician and Colonel of the Military Police of Goiás. He worked during the emergency phase of the disaster making hematological evaluations of the victims); Alexandre Rodrigues de Oliveira (physician from Brazilian Nuclear Industries [Indústrias Nucleares Brasileiras - INB]. He worked during the emergency phase of the disaster and made medical follow-up of the contaminated patients (radioacidentados) from 1987 to 1997); Nelson José de Lima Valverde (physician from Furnas Centrais Elétricas and the Reference Coordinator of Radiation Patients of the Rio de Janeiro State University. He worked during the emergency phase of the disaster and was part of the experts team invited by the CNEN to evaluate the policemen); Carlos Eduardo de Almeida (technician at the Cancer National Institute. He worked during the emergency phase of the disaster); Alfredo Tranjan Filho, Adviser to the president of the Brazilian National Nuclear Energy Commission - (Comissão Nacional de Energia Nuclear - CNEN) he worked during the emergency phase of the disaster and was the Coordinator of the Permanent Radioactive Waste Repository construction.; Carlos Santana Lira and José Luiz Pires, sergeants in the Military Police of the State of Goiás. During the session Representative Pedro Wilson (Partido dos Trabalhadores - PT- Worker's Party - State of Goiás), the president of the Human Rights Commission, although not part of the list of speakers, was given the opportunity to make a statement.

105 Public Hearing No. 0604/97 took place on August 21, 1997.

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the discourse of the nuclear experts "obliterated" the experiences and perceptions disclosed by the "cesium policemen". On that occasion, the conclusions of the experts' Final Report were thus communicated [106] to the parliamentary members, ACS and the cesium MPs:

> " (...) ***the accusations made about certain manifestations are not associated with any sort of exposure to ionized radiation."*** (bold face prints and italics in original). However, the document asserts and emphasizes that " (...) ***the diagnostic complaints, observed in policemen are in fact related to health problems although they are not connected to radiation exposure.*** (bold face prints and italics in original). *As a medical doctor, I recommend that the authorities in charge grant the policemen in question and all of the military men of the organization along with their families' coverage plans of education and health in a multi-professional perspective. Therein would include courses about primary and secondary prevention of conditions of risk such as arterial hypertension, diabetes, dislipidemia, tobacco addiction, alcoholism, mental dysfunction, stress, etc. In a similar manner, any such conditions discovered should be given immediate medical assistance as a direct priority so that the physical and mental recuperation of these individuals, who played an extreme relevant role for the security and well-being of the society , can be achieved. physical health can be achieved.*
> (VALVERDE et.al. 1997b. Relatório de Avaliação Médica de Militares da Polícia Militar do Estado de Goiás.
> CÂMARA DOS DEPUTADOS: Redação Final da Audiência Pública Nº 0604/97, da Comissão de seguridade Social e Família. 1997).

The discourse of the nuclear specialists, based on their expertise and

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106 Dr. Valverde concluded his testimony with the reading of the final paragraph of the Official Report, which he insisted had been already sent to the MP Command of Goiás via the Brazilian National Nuclear Energy Commission - CNEN. It is worth mentioning that neither the Brasília representatives nor the ACS were aware of this.

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experiences with the Goiânia disaster, constantly underlined in their testimonies in the Special Session, weakened any kind of authority the policemen may have had regarding their claims of distress in their illness narratives. The nuclear experts were thereby able to reframe[107] the soldiers' illnesses as stress[108] perceived as: 1) proper to the policeman's professional identity; 2) caused by the triple labor contributed by most of them. The technical-scientific debate ended with the formal presentation of the medical report. Following its recommendation, the "cesium police" issue as a social problem of the military organization was to be resolved as just that - a military concern.

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107 *"Embedded in the ideology which has as its function to mask class relations, the physician acts to preserve: 1) the monopoly of his knowledge; 2) the undisputed authority, granted by the doctor's society, to dislodge the illness, and even the body and feelings of his patient."* (Loyola 1979).
My translation of original text written in Portuguese.

108 The nuclear expert made a reference to the strike held by military police in the states of Minas Gerais, Pernambuco and Alagoas during July, 1997. These policemen demanded higher wages and the Federal Government actually went as far as to send soldiers of the Brazilian Armed Forces to contain the protest in Alagoas. With regard to the state of destitution of the military police, the political scientist Paulo Sérgio Pinheiro states:

"The mess uprising of the MPs in Minas Gerais illuminates like an overhead projector the alarming wages conditions of all categories of the Police - military and civilian (under-cover) - *in all of the states.*

[There are] *Young policemen with families and children, obliged to live in 'favelas' and illegal residences, and because they have not the educational background required by the economics formal sector, they are condemned to work as private vigilantes, in the so-called 'bicos'* (money on the side) (...)

Most shocking is the disparity between these starving wages of the enlisted recruits, corporals and sergeants and those officers, colonels and delegates whose salaries are in excess of $ 9,260 (monthly), thus causing a situation in which hundreds of retirees are receiving between $ 13,890 and $ 27,780 monthly" ("Badernas Policiais e Mudanças". Newspaper *A Folha de São Paulo* July 6, 1997).

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The tragic death [109] of the ACS vice-president in a car crash contributed another element to the process of reestablishing social order. It was the vice-president of ACS who had collected and organized all of the individual testimonies and accusations of the cesium policemen as an agenda item for the ACS. It was he who through political and administrative negotiations brought these personal complaints to the center of the institutional arena where different forces were in conflict: the Nuclear Experts System, the General Command of Police and Members of Parliament (Sistema Perito Nuclear / Comando Geral da Polícia / Parlamentares). His death had a great impact on the police movement both on interpersonal and institutional levels. After his death, the other members of the ACS executive board were unable to advance the "cesium policemen's" accusations. In addition, they were unable to recuperate emotional fortitude, nor did they generate any consolidated leadership. Some of the persons, in fact, did not believe that this was an accidental car crash[110]. On many occasions, they referred to the incident as an "ordered accident" ("um acidente sob encomenda").

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109 The death occurred on September 12, 1997, a few days after the "Public Hearing" of the Commission of Social and Family Security of the House of Representatives in Brasília.

110 At the moment of the burial, I heard rumors from some individuals belonging to the "cesium policemen's" group about the causes of the accident. They have told me that the ACS vice-president was organizing people against the ideas supported by the Police Military Command and by the Government which caused his physical "elimination". They have argued that the ACS vice-president was used to take the highway where occurred the "accident" and the way it happened was very strange in their opinions.

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4) Reintegration:

The body as a signifier of doubt and thus an expression of resistance is reinscribed into the disciplinary and hierarchical system. The nuclear expert's knowledge is reaffirmed as unquestionable and the cesium policemen's drama is contained. Those policemen who gave visibility to their distress through the media exhibition of their ill bodies were gradually returned to the corporate order. Medical leaves, transfers to the Goiás state backlands and promotions are some of the mechanisms by which such order was achieved. Sergeant Alexandre, for example, received a medical leave and then returned to work, refusing the confrontation with the institutional power and choosing to remain silent about the prevailing disaster / illness facts. He decided to have vasectomy surgery because his greatest fear was "*to have a child with mental disorders.*" Sergeant Paulo, as a member of the Forest Battalion, was relocated to the Hydroelectric Plant in Serra da Mesa, in the extreme northern region of Goiás state. In October, 1997, Soldier Carlos filed an individual suit against the State of Goiás for damage[111] to him while working under orders from his superiors without appropriate clothes nor equipment in an area of radioactive contamination.

From the above accounts, one can see that the white, orange, brown and blue overalls are source of a multiplicity of symbols. The mystification which the CNEN representative refers to during the Special Session is just one of the various perspectives utilized as a point of discussion and argument. Thus, the meaning of what I

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111 SOBREIRO ADVOGADOS ASSOCIADOS: "Ação de Indenização C/C Reparação de Danos e Lucros Cessantes". 1997.

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have called "mystification" depends on the perspective of the social actor in question, as well as the historical context and the ideological implications of his/her discourse. The mystification used by the CNEN technician in his reference to the "cesium policemen's" symbolic apprehension of the overalls as a distinctive mark can also be employed to discuss the nuclear experts' system at the Goiânia Disaster scene. Wearing those orange overalls the nuclear technicians said farewell to the city towards the end of December, 1987. The orange overalls were worn with the inscription *I Love Goiânia - CNEN* (Eu Amo Goiânia - CNEN). At that time, this could have been read as a sign of belonging to the city, a relation of affection born in conditions of catastrophe. The slogan and the airport fare-well also were part of the campaign, coordinated by the Goiás State Government to overcome: 1) the discrimination suffered by natives of the state as they traveled abroad; 2) the affected state economy due to the devaluation of Goiás commodities in the Brazilian market. It also was part of the self-recognition that the technicians indeed performed their best in terms of imparting knowledge and cleaning up the contaminated areas. The orange overalls represent for many of the technicians an important moment in their careers. During the Goiânia International Conference - *Ten Years After* (Dez Anos Depois), which took place in October, 1997, one of these orange overalls from the fare-well event of the technicians, as they returned to their families for Christmas 1987 celebrations, came back to Goiânia and was displayed in a special stand of the Instituto de Pesquisas Energéticas e Nucleares - IPEN/CNEN (Institute for Energy and Nuclear Research).

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Plate 02.
IPEN stand at Goiânia International Conference - "Ten Years After "
(From Telma Camargo da Silva 1997)

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From the point of view of the nuclear experts, the professional identity of the policemen has nothing to do with these overalls. Therefore, the overalls are more than just a symbol of difference, they imply a more complete marginalization of the MPs activities during the decontamination process as, in fact, labor in an area of radioactive risk. It is in this relation that the invisibility of the occupational distress[112] experienced by the "cesium policemen" was constructed. Consequently, their ineligibility to apply for health follow-up and to receive legal compensation comparable to that given by the nuclear experts to its workers. Beyond this, the relations among profession / distress / heroism is also threatened, for in accordance with professional convention, the heroism of the police officer is restricted to his confrontations with bandits and criminals. What sort of criminal is invisible, inaudible, odorless and impossible to confront with ammunition like the one confronted at the Radiological Disaster emergency?

In this sense, the policemen's distresses are dislodged from the categories

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112 The space of labor has been a privileged locus to analyze this process of symbolic re-elaboration and the visibility / invisibility of determined illness. In Brazil, recent studies about petrochemical industrial workers (Rangel 1993); asbestos miners and processors (Scavone 1996) and the workers at metallurgic plants (Bento 1996) have pointed out that the pollution in the workplace has seriously compromised the health of the laborers. Nevertheless, such physical and mental distress has been discredited as an occupational illness. The invisibility of the occupational disease, its exclusion in company health benefit packages and the clash between employees and employers has resulted from numerous factors. First, because the social actors belong to social groups with divergent interests and specific identities. Secondly, because the constructed representations interfere directly with daily life inducing to legal, financial and other implications of assistance. Thirdly, because the self-perception of the worker him/herself acting in the risk area is associated with his/her labor identity (Rangel 1993; 1994). In some cases, the worker feels safe because he/she believes that the knowledge he/she has and the technique he/she got are sufficient to overcome any danger.

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produced by the disciplinary powers: they are not victims because they do not present the defined symptoms of an identified radioactivity patient; they do not have an occupational illness because they are not recognized as nuclear workers; they are not heroes, for the context of danger that they experienced lies outside of those defined by the system of military hierarchy. As is evident in the phrase "*a soldier must overcome his environment,*" the "cesium policemen" must file away their complaints, take care of their wounds, reorient themselves in accordance with the hegemonic model of masculinity and resume their duty in fortitude with the disciplined military body.

If the "cesium policemen" are not considered part of the population officially defined as affected by the radiological disaster, I raise some questions based on those 1997 events: Who are the disaster's victims? Which symptoms indicate a person as a radioactivity patient in a context of radiological disaster? How did those individuals enter into contact with the radioactive source? What implications does the categorization have for an individual life? Which forces operate in the classification of an affected population? What experiences do those individuals have in relationship to the disciplinary powers? To understand those issues, I need to go back ten years earlier, in 1987, to the scenario of the disaster.

In this second chapter I illustrate my argument that the Goiânia radiation disaster is a processual event based on the narratives of the "cesium policemen" who claimed, in 1997, a causal nexus between their current illnesses and their work during the emergency phase of the disaster in 1987. From the perspective that the hegemony of

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class and power relations are manifested in both material relations as well as through symbolic reproduction, I analyze the low status of the enlistees in the military hierarchy through opposing representations of the body and manners. The construction of military identities informs the way the Military Police worked at the disaster site. There were those who commanded and those who obeyed. I argue that authoritarianism, class distinction, military identity and a masculinist ideology are sources of social vulnerability for these "policemen" working in the response to the disaster. Also, I examine in the aftermath of the catastrophe the struggle between "cesium policemen" and nuclear experts over the representation of the overalls as a symbol of safety. Based on the assumption that the cloth has a moral nature which embodies and transmits social values, I examine the ways the members of the nuclear institution denied the "cesium policemen's" claims of distress. The nuclear experts, like the military authorities, as members of the elite, control the manners and other symbolic expressions, just as they hold a controlling position in the social hierarchy. I argue that the erasure of the "cesium policemen" as victims of the disaster is a source of their social suffering. In the next chapter I describe how the radiation spread, and I analyze the constitution of the official victims of the disaster. I pursue my argument that the Goiânia radiation disaster is a processual event based on the struggle undertaken by these official victims for better health care and compensation.

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THREE
AFFECTED POPULATION CATEGORIZATION: BODY SCRUTINY AND SEGMENTATION

"On the evening of September 29, 1987 the 57th Street inhabitants made their first contact with the disaster when sanitation and police force came to evacuate the residents of house number 68. At dawn, the persons living nearby were also removed from their house and isolated at the Olímpico Stadium, while the neighborhood did not receive any information about what was occurring. Next morning, the space showed the marks of change: a string line separated all the evacuated houses. Some 57th Street inhabitants looked for information at the Olímpico Stadium where they were told about the opening of a Cesium teletherapy unit. At that occasion, they were notified that within two or three days everything would be normalized and everybody would return to their houses."
(Associação das Vítimas do Césio-137 1989)

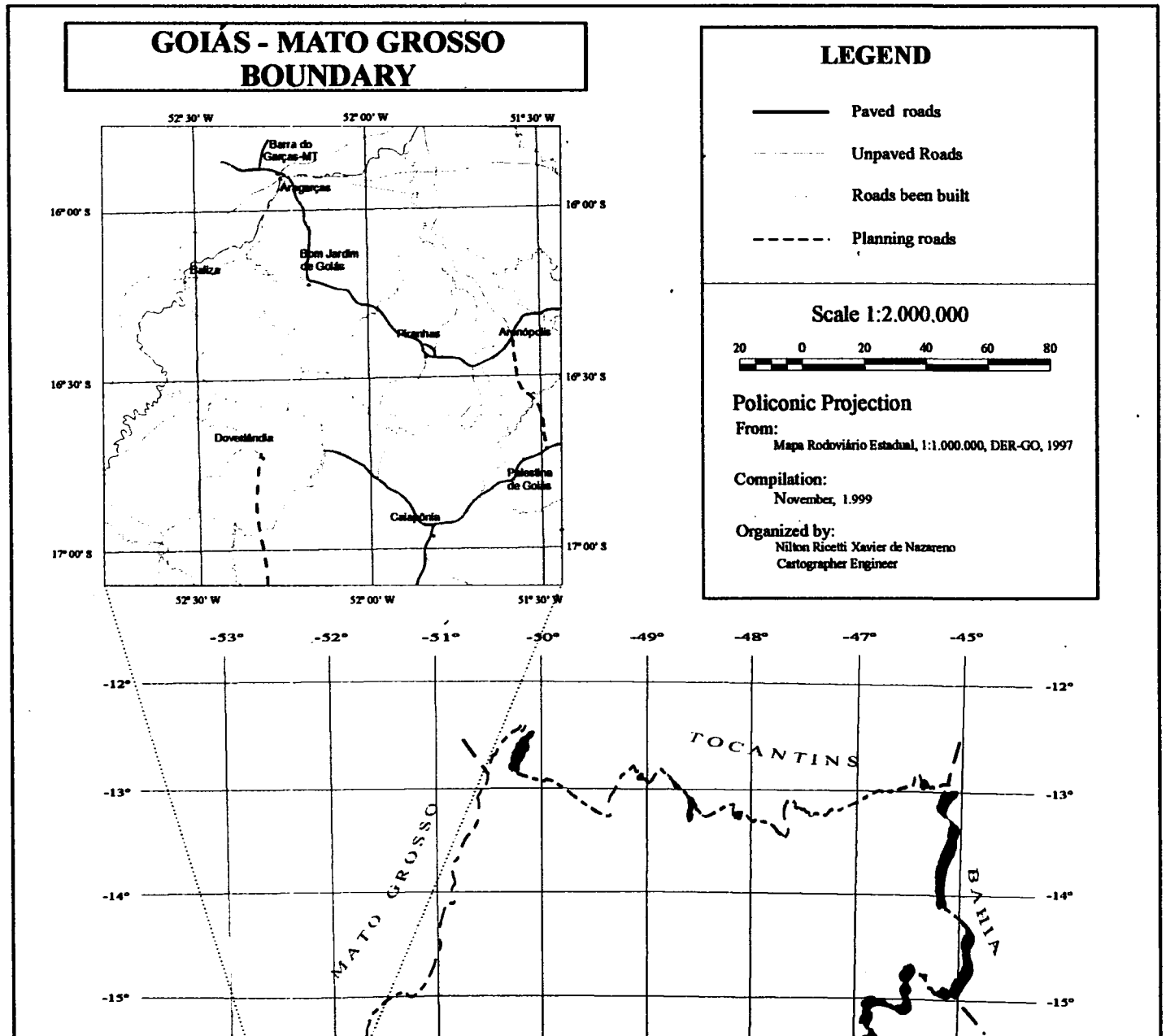
Contrary to promise, ten years after September 29th 1987, nothing was normalized for the former inhabitants of 68, 57th Street. Nobody could ever return to their houses because they were demolished after the ground, and the places where their houses were located, had been declared one of the most contaminated sites of the Goiânia Radiological Disaster. I choose an individual who lived at house number 68 to guide me

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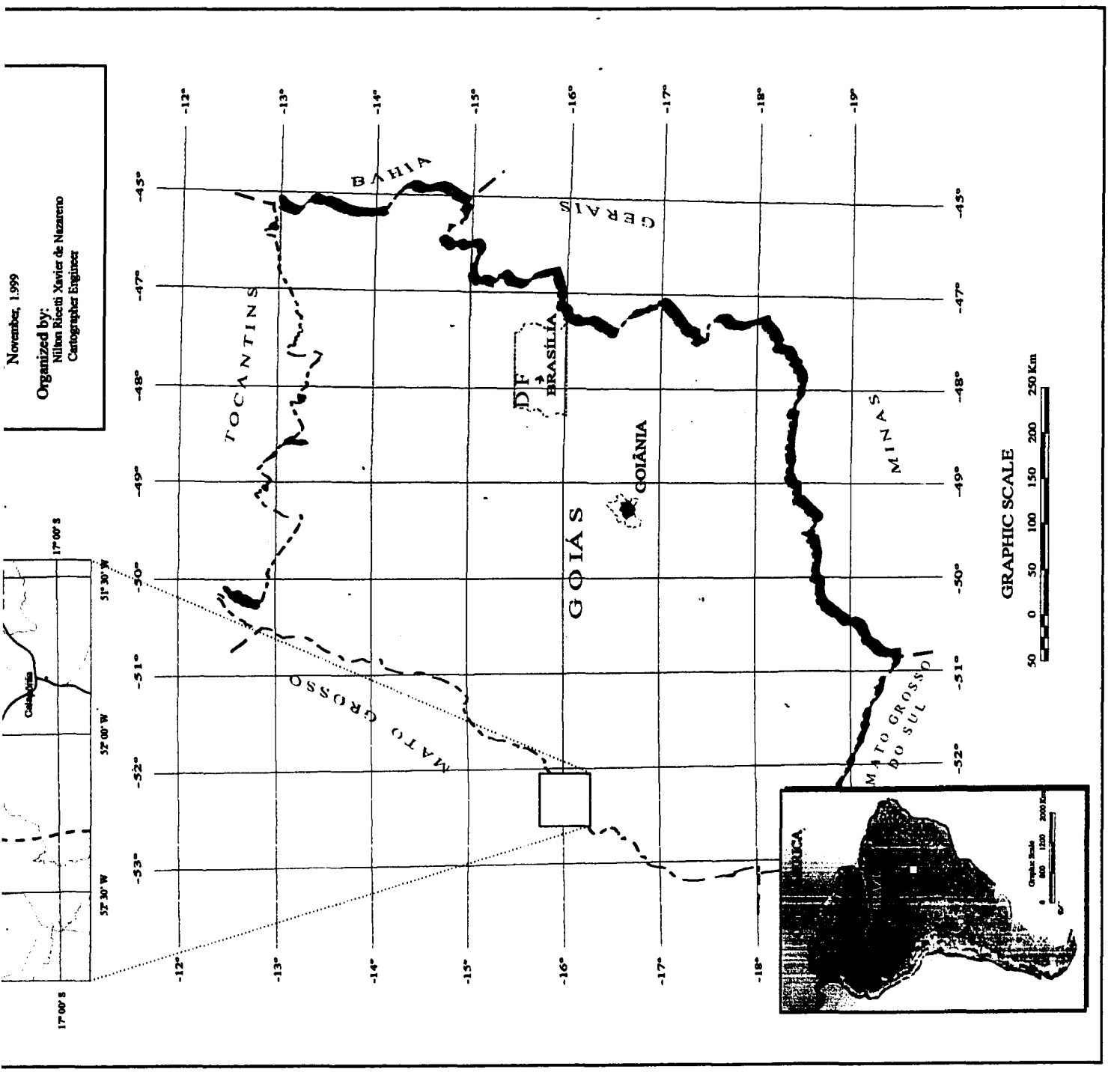
in reconstructing the events of ten years earlier. Through this flashback I intend to understand who, why and how the population affected by the disaster was officially defined. Thus, I build with Margarida, her story as a radioactivity patient from the Goiânia Radiological Disaster.

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10. FROM THE COUNTRYSIDE TO THE DISASTER SITE

"I was born in August 22, 1960 in Piranhas.[113] *My mother, I even didn' t knew my mother. I lost my mother when I was three years old. So, I don' t remember my mother. And, my father... Poor guy! Always worked hard. Soon after my mother' s death, we moved to Barra do Garças,*[114] *where he earned his money doing the transportation of goods in an old wagon. We were really poor. Humble people. When I was a little girl, he worked on an agricultural farm as "meeiro"* [115]*. This thing that ... one plant, then... harvests and... After all the work done one has to divide... with the landlord. I have three sisters and two brothers. My oldest sister took care of me when my mother died. She always says that I don' t care after her because I don' t travel to Barra do Garças to visit. We don' t see each other for three, four years. I am a*

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113 The municipality of Piranhas is at the South-West of Goiás state, located 312 kilometers from Goiânia.

114 Barra do Garças is at East of Mato Grosso state, located at the boundaries of Goiás state. It is 404 kilometers from Goiânia.

115 In Brazil, there is a production system called "*parceria*" raised with the decline of the coffee plantation at the State of São Paulo and then expanded to other Brazilian areas. The "*parceria*" is a kind of partnership between the landowner, who furnishes the land, and the peasant (the "*parceiro*") who works the land and pays the landowner in *natura* for using his/her land. The "*parceira*" understands different types of partnership based on the accord defined regarding the use of the land and includes the "*aforante*" and the "*meeiro*". Through the partnership understood as "*à meia*" (half / half), the landowner provides to the peasant, the "*meeiro*", the land cleaned, slashed and burned, ploughed and also furnishes him the seeds to be cultivate; the " *meeiro*", from his side, must plant, clean, harvest and them divide the production by two, that is he must deliver to the landowner 50 percent of the entire crop (Candido 1982 (106-107; Singer 1976 [1961]:137).

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Catholic person but... I don' t go to the church let' s say... every Sunday. I hardly go to the mass. I believe in God and I say my prays every day. I always say that when something goes badly: God knows what he does. I just finished the first grade in a school here, in Goiânia. I was too lazy to study. I want to go back to school. I have plans for next year (1998). When I first married, I was almost seventeen years old and my husband nineteen. When my daughter was a year and some months he found another woman and left me. This was after two years of marriage. I kept living with my mother-in-law, in Barra do Garças. I lived with her and did household work for a friend of mine.

Then I decided to move to Goiânia. I thought that it was a better place to live. A bigger city. A city more developed than Barra do Garças that is in the countryside... So little. So,... Suddenly, I decided. I accepted a friend invitation and decided to move[116]*. So, I came. I had a friend here in Goiânia. She moved from Barra do Garças a long time ago. When I arrived, I didn' t had a job. I didn' t have a place to stay... So I stayed in her house doing the domestic tasks. I worked and lived there for some time. So, I decided... To live, to buy my stuff. I started again... To make again my life. Because you know, I lost everything... when we broke up, me and my husband.... So,...Everything in my life was a*

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116 Durhan's study on Brazil rural migration points that it occurs in a context of personal relationships that include a network of relatives, friends and fellow citizens. She argues that the majority of rural migrant women do household work as they first arrive at the city. Often, it is a non-registered job, the salary is low and it is compensated by housing, food and clothing. The patron also helps the newcomer to acquire the necessary skills to circulate at the urban space as to use the public service and the bureaucratic organisms. The kind of relationship established between employee and patron is defined as "clientelista". (1978:150;183)

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mess. We divided everything. I started my life again, here in Goiânia.

In 1987, I moved from the periphery to Goiânia downtown, to 57th street. It was a quiet street and I didn' t have to take a bus to do my stuff. This section of the city was closer to better public schools and close to the very Goiânia downtown. It was... lets say, a street on the back of an Avenue. There was no commerce in there[117]*. I rented a tiny house. In the plot there were five more tiny houses __ "barracões" __ on the back of a house facing the street. I don' t remember very well the names of the people living there. I had been there just for a month and a half so I hadn' t met everybody yet. But I remember that the owner of the plot (E.) lived in a house on the very back of the lot, with a dog named Sheik. She earned money in renting those houses. She has two sons. One (Ru.) has a room outside the house, between my "barracão" and the one where* C. *lived __ who had a stand on the Mercado Popular where she sold greens and vegetables __ and his child* B. *The other* E.' *son* (R.A.) *slept on his mother' s house but he*

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117 Some people I have interviewed recalled the street as a residential one. One talked about the number of kids playing and yelling on the street. From my 1988 field notes, I indicate that people from other areas circulated there due to the location of community services as: A Presbyterian church named *Assembléia de Deus*; a popular market, installed at one edge of the street __ *Mercado Popular*; a non-governmental organization called CAMPI - *Círculo de Amigos do Menor Patrulheiro de Goiânia* (Friends Circle of Goiânia Younger Patrols) that delivered assistance to young person; and the CRD - *Centro de Reflexão e Documentação* - (Center of Thought and Documentation) that offered courses to members of the trade union and popular movement as well as kept an archive of related matters and edited some brochures. On the weekdays, a hundred and twenty children came to the CAMPI for lunch. Inside individuals houses some activities congregated outsider inhabitants: a lady offered cheap and popular take out food ("marmitas"); a second one was a personal dressmaker for Goiânia elite members, and, the third one, a religious young woman, organized twice a week chanting prayers meetings at her house.

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spent the days on the street. He collected discharged metals and other stuffs to sell to a junkyard owner. There was another "barracão" where G. *and his husband* __ (P.), *a baker*__ *lived. They were newcomers in the plot. Like me, they were there for just a month and some days before the police came to take us. They came from the town of Redenção, in Pará state. The other barracão" was rented to a woman. She was selling clothes. I was selling*[118] *clothes too and perfumes and I had to go people's houses, knocking at the doors. On Saturdays, I did household cleaning for some people. I was doing anything to make money. So, we were too busy. We didn't have time to see each other... So, I cannot remember her name. The one I remember very well is C. because she visited me with her son. Ah! In the front, facing the street, there was this big house.* E. *rented it to a couple* (R. / J.) *that lived there with their children. So, there were a lot of people living in the same plot. We used the same bathroom. Not E. who has her own inside her house. Not the people from the big house.* E. *didn't share with her sons the money she earned from the rents. They could't eat at her house. When R. A. arrived home to eat, he had only rice. Just rice. Just rice. She said, she would't buy meat, nor eggs because the money she got it was for buying food for her dog. I think that is crazy. How you can buy food for a dog and not for your children? But R.A. was a fierce guy too. He frequently fought against his mother. Sometimes I saw him sitting on the sidewalk crying. He hit things. He disputed...There was immense violence in his family. And... Sometimes I felt sorry for him. Eating just rice. So, I gave him*

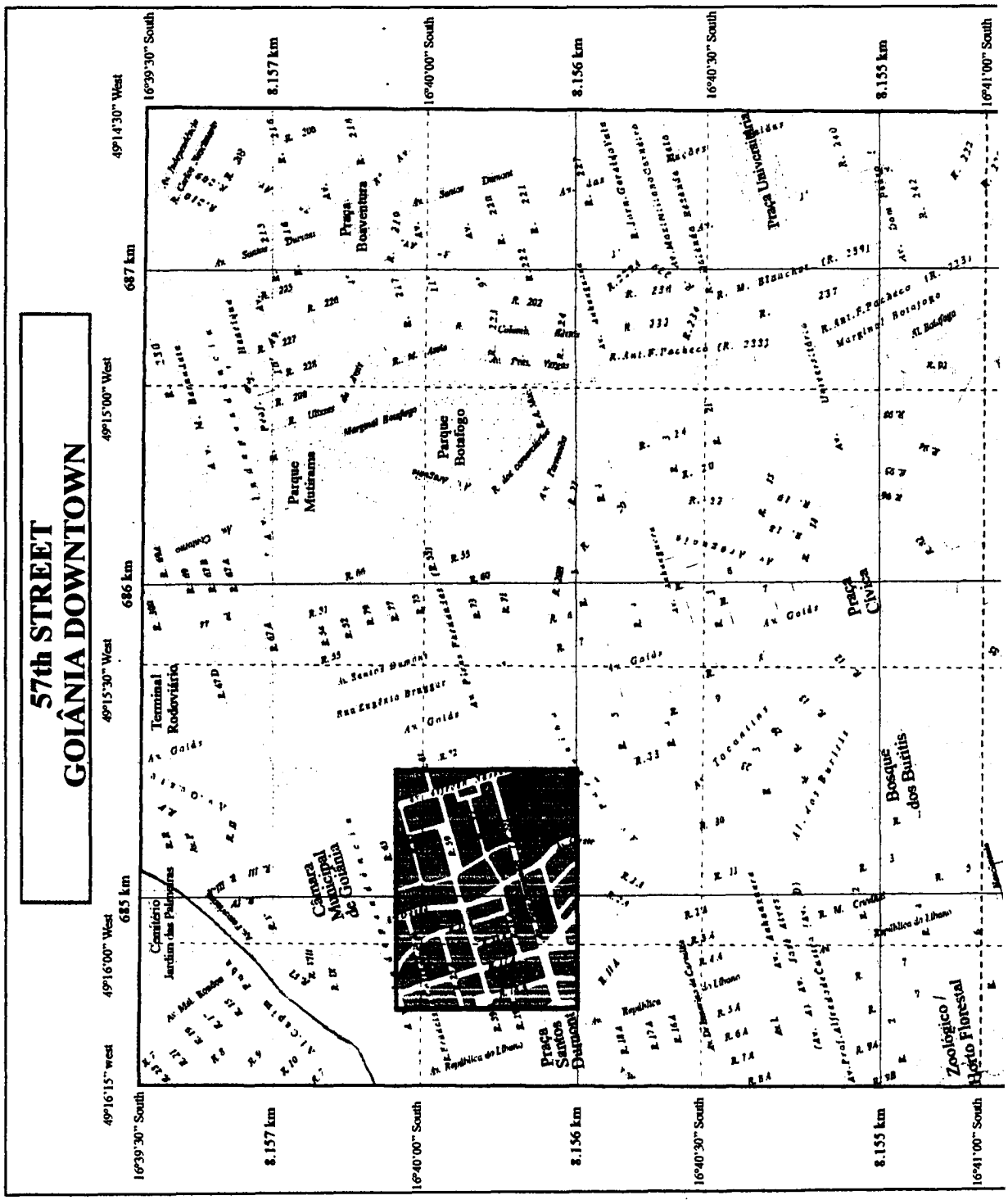
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118 She was in a business network of sellers named *Pierre Alexande*r that works like *Avon*.

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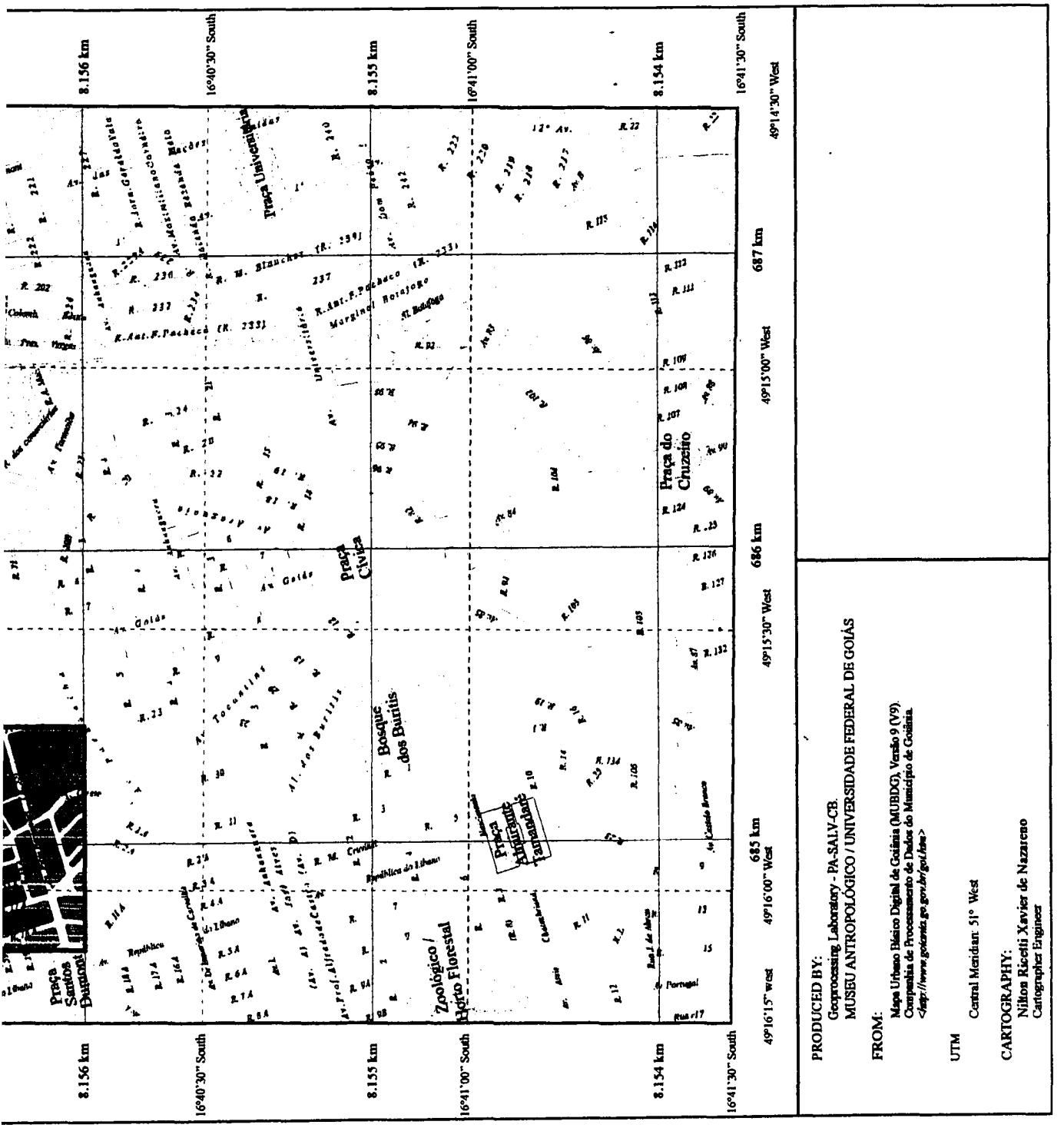
meat to eat. Gave egg. Because I felt sorry for him. I found his situation a crazy one."

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Plate 03.
57 th Street, 1988. Right at the end of the street, the "Mercado Popular".
(From Telma Camargo da Silva 1988)

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Plate 04.
Entrance of the CAMPI, at 57 th Street.
(From Telma Camargo da Silva 1988)

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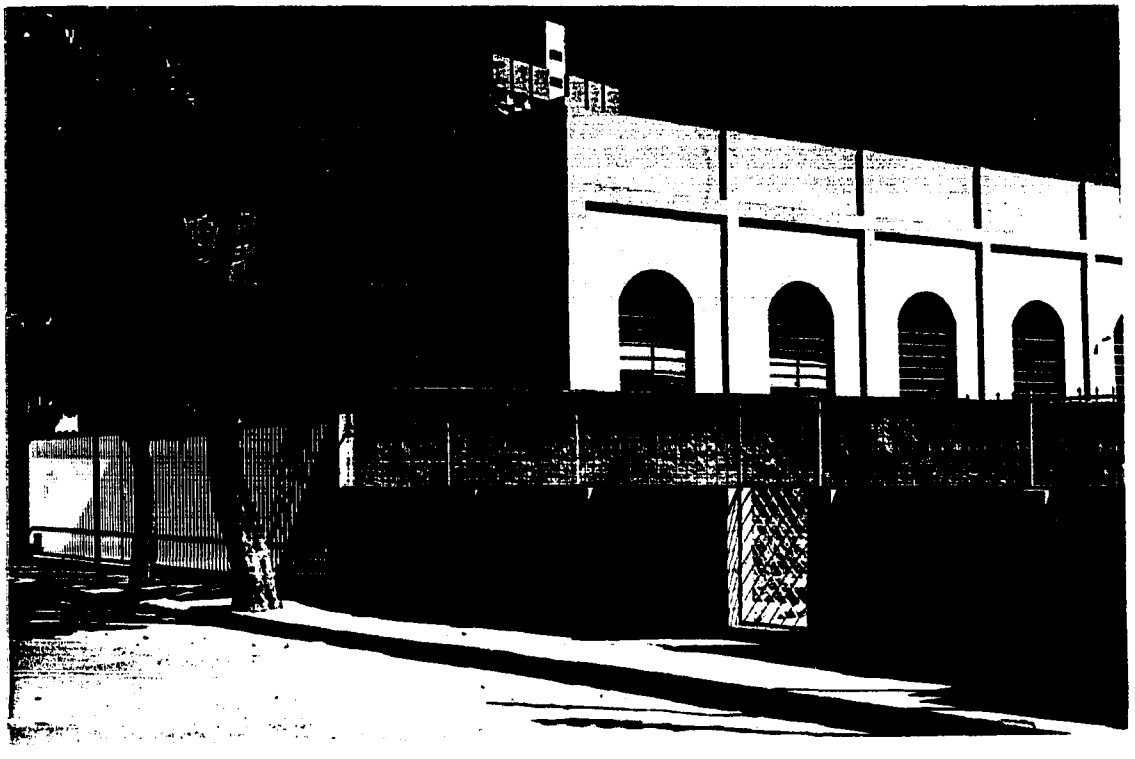


Plate 05.
"Assembléia de Deus", Presbyterian Church at 57 th Street.
(From Telma Camargo da Silva 1988)

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Plate 06.
Mercado Popular at 57 th Street.
(From Telma Camargo da Silva 1988)

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11. BEING EXPOSED TO THE RADIATION

" In September 87, It was warm, and I was feeling sick from the hot weather. I felt the heat on my body. My body had caught fire. I had so much agony, that damn agony, the heat... But I thought that it was because I was pregnant. I was pregnant with Re. I was almost four months... pregnant. And... I knew nothing. I didn't have any experience with radiation. Nothing. I never had been involved with this kind of thing. So, one stays out of what is going on. So.... I felt too much hot at night. That agony... You know? Then.... I thought it was because of the weather. So, I got up from my bed and stayed outside my "barracão". And I saw R. A. He was feeling bad, throwing up, had temperature and at this point he was already having face discolorations. He was losing his hair... And he was taking frequent showers... At the same bathroom... It was the same bathroom we all used. He didn't use the one inside his mother's house. So, sometimes, when I went to take my shower, the bathroom was full of R. A's hairs. And I cleaned and I washed the place. And this "stuff" there didn't stop to contaminate me. (She is referring to R.A.' radiation-contaminated hairs which she have found inside the bathroom for many days. "Stuff" refers also to the invisible radiation coming from the contamination left behind by R.A.'s contaminated body.) *The yard was not paved and sometimes I gave it a good sweep. I collected the garbage around the mango tree. Sometimes, I even harvested the mango tree leaves with my hands. The leaves were hyper-contaminated. I gathered them and I put all the stuff inside a garbage bag. I tied it and left it to the garbage collector to pick it up. And the metal unit R.A. brought home was there. And I*

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passing by.... Always, continually going up and down in the yard. And I think I was getting radiation from that stuff. During the day, my daughter (A.) played under the mango tree. She pretended that it was her little house. She arrived from her school, took over her uniform, caught her toys __ she had many little dolls. She was very young and loved to play. I think that she even put her foot over the carpet. She was seven years old. Because you know? There was the mango tree. R.A. put the unit on a carpet, under the mango tree. And my daughter was playing over there. So, all those things there... We had been contaminated but, we didn't know why.

I think that the unit stayed there for some days. The day after R. A. brought it home, I remember it was Sunday morning, he tried to open it... He hit that machine part over there... Trying to open it.... I even asked him:

_ What is it R. A.?

He answered me:

_ This is... I am trying to get the lead from that stuff for me to sell it.

You know Telma, the lead is expensive. He could get a good money on selling it.

And I kept asking him: __ But what sort of machine part is that?

He said: __ I don't know. We found it.

W. was there too. So, they gave big hit on that unit. Hitting, hitting and the radiation going out, isn' t it? And they got to take some pieces of the stuff... But, thanks God, they didn't get to open it all... Because they didn' t have the appropriate tools. They couldn' t open it. Then, I think it was Sunday afternoon or Monday morning, I cannot remember very well... I know that

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after some days, they took it from the yard. They put it on a wheelbarrow and they took it to D., a scrap dealer, who lived next to his Junkyard. There, the stuff was opened [119]. Sunday , the guys were trying to open the thing, Ge., my boyfriend, brought his two sons __ from a former marriage __ to play with A. They stayed on the yard.

W. and R. A. started to feel bad Sunday afternoon. All the night R. A. passed vomiting. His mother said that it was caused by the junk food he had on the street. That was the coconut water he drunk. He was feeling poorly.

My boyfriend, the father of the baby I was expecting, had lunch every day at my house. He didn' t sleep over but we saw each other every day. He usually came for lunch and took a nap before going to work. When he saw R. A. He asked me: _ What does he have?

I said: _ I don' t know. But I took care of him last night. I gave him medicine. His mother didn' t want to get up so I took care of

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119 According to the IAEA (1988:23-24):

"18 Sept. The rotating assembly had been placed on the ground under a mango tree in R.A.'s garden. Here R.A. worked intermittently to remove the source wheel of the rotating shutter. In the course of the attempt he punctured the 1mm thick window of the source capsule with the screwdriver and scooped out some of the source. Thinking it might be gunpowder, he attempts to light it. On 18 September he succeeded in removing the source wheel.

When measured on 2 October, the residual contamination under the mango tree gave a dose rate of 1.1. Gy.h $^{-}$ 1 at 1 m. The whole of R.A. S house and its grounds were extensively contaminated. The house had to be demolished and the topsoil removed.

The pieces of the rotating assembly were sold to D.F., who lived next to the junkyard he managed (Junkyard I, Location C). The pieces were transported in a wheelbarrow (by an employee of D.F..): That night D.F. Went into the garage where the pieces had been placed and noticed a blue glow emanating from the source capsule. He thought it looked pretty and that the powder might be valuable (like a gemstone) or even supernatural, and took the capsule into the house."

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him. I touched him. I felt he had temperature. The fever burned with him.

Ge. thought that R. A. might have got AIDS because his body was all over with black spots. I said that I didn' t know what was it. I knew that something strange was happening. I didn' t know what. Then... They arrived. One night, I was sleeping with my daughter, it was 3 A.M. and the Police Force arrived. They said we couldn' t stay there anymore. I had a... damn shock... Because I was sleeping and they knocked at my door. I opened...He said:

__ This is the police.

I was astonished and I asked:

__ What did I do?!! My God!! Am I in the wrong?!!

__ No! Don' t be scared...

He tried to explain to me why I should leave my house. The only thing I remember is he saying: __ There is a micro-bus outside. You should take it.

He asked about other people living there ... I started to tell him and they started to collect the people. G.' s husband , the baker, was already working in the bakery. So, they became very scared and run after P. They said he couldn' t get in touch with other people.... The bread would be contaminated. So. They found P. and threw the breads away.

The police said the site was contaminated. He asked me if I remembered the machine unit which stayed on the yard. I was remembering but I wasn' t understanding. Then, he said that we would find the answers at the Olímpico Stadium. But I thought if it was a contamination, I should take a bath and everything would be fine. You know? I will be clean again, won' t I?

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We were not allowed to take anything. Any personal papers, family pictures, identifications... Nothing. Even a tooth's brush. They locked my house door. They kept the key. I never saw my house again. When I knew, everything was demolished. Everything. When I returned to this place, my home was gone."

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Plate 07.
68, 57 th Street, after demolition of contaminated houses.
(From Telma Camargo da Silva 1988)

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12. RADIATION EXPOSURE NETWORK

Margarida' s recollections of the days before the official acknowledgment of the radiation disaster shows that she got exposed to radiation because: 1) she lived in a shared plot; 2) she nursed her neighbor. Although she was not involved in scavenger activities that started up the contamination chain, she was among those first and acutely affected by the disaster. Contrary to what has been emphasized by journalistic and scientific accounts of the disaster, scrap trade is just one of the multiple aspects of the fragmentation and dispersion of the radiation source. The core of disaster contamination points to other interconnected components such as habitation pattern, social relations[120], and gender-based radiation circulation.

Margarida' s narrative raises the interconnection between the disaster and the everyday life of poor people living in the city. At the same time, anthropological understanding of this exposure network contributes to demolish the stigmatized labels I heard and read many times: individuals got involved in the disaster because they were stupid, dirty, promiscuous, primitive, uneducated and even thieves. Those classifications blame the victims of the disaster and veil the culpability of IGR owners, CNEN and IPASGO authorities. I acknowledge scrap commerce as a major aspect of the radiation dissemination, but not its sole causation. I argue that the comprehension of how the initial people got involved with the caesium contamination requires the association of different factors including economic and symbolic dimensions of individual' s networks along with the condition of vulnerability of poor people in an urban setting.

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120 Although some studies point to friends and relatives as vehicle for the radiation dispersion, they do not analyze the nature of those relationships. (Among others: CNEN 1987; Roberts 1987:1028; Ciência Hoje 1988:4; Oliveira 1988: 4; Dancy 1989:15; Curado and Silva 1990; Oliveira at. al. 1994 :49; IAEA 1988:22-29; Silvestre 1996; Greenhalgh 1996.)

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As Rajan (1999) has already pointed out in Bhopal case, this effort to blame the victims is part of the disaster erasure process. In the India tragedy, Union Carbide claimed that MIC (methyl isocyanate) is only an irritant; it is not fatal. The company subsequently claimed that the large mortality was due to a combination of undernourishment and a lack of education among people affected (Id:263). In the Goiânia radiation disaster, the effort to blame the victims deprives them of moral and shifts the cause of the disaster from institutions and politics to the level of individual behavior. This disqualification process correlates notions of theft[121], lack of education, and poor hygiene and victim. Thus, "radioacidentados" and "victims" become labels of burdensome identity. In this way, some individuals affected by the radiation who were classified by FUNLEIDE as patients refused to be included in this category because of the meaning it had acquired[122].

In order to understand how individuals became contaminated by the dispersion of radiation in the thirteen days before the experts' acknowledgement of the disaster, I will consider the disaster in relationship to the "radioacidentados" habitation patterns, their social relations, and gender circulation in public spaces.

12.1. Scrap Trade: From Exchange Money to Gift

The collection, fragmentation and dispersal of the radiation source would follow the pattern of behaviors followed every day by many scavengers working in Goiânia streets, although the particular light that emanated from the source capsule added

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121 Some sectors of nuclear experts, local government and Goiânia inhabitants considered that the abandoned cesium-137 teletherapy unit was not "collected" but "stolen".

122 I will discuss this issue in my last chapter.

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a new value to the scrap material and changed the usual way the junk material circulated. As soon as D. A. Fe. _ the scrap dealer _ became fascinated with the blue glow that emanated from the unit at night, this commodity[123] acquired a use-value[124] in addition to its medical use, that of radiotherapy[125] and its commercial value as a scrap inside the junkyard network of trade. The waste that had already entered some other regime of consumption and was already an important symbolic element in the lives of some of those individuals[126] acquired new meanings. In this case the scrap means on one hand, the lead used as raw material for recycling activities. On the other hand, it was used as a

---

123 *"The commodity is, first of all, an external object, a thing which through its qualities satisfies human needs of whatever kind. The nature of these needs, whether they arise, for example, from the stomach, or the imagination, makes no difference"* (Marx 1990:126).

124 *"The usefulness of a thing makes it a use-value. But this usefulness does not dangle in mid-air. It is conditioned by the physical properties of the commodity, and has no existence apart from the latter. (...) The use-values of commodities provide the material for a special branch of knowledge, namely the commercial knowledge of commodities. Use-values are only realized [verwirklicht] in use or in consumption. They constitute the material content of wealth, whatever its social form may be. (...) A thing can be a use-value without being a value. This is the case whenever its utility to man is not mediated through labour. Air, virgin soil, natural meadows, unplanted forest, etc. fall into this category"* (Marx 1990:126; 131).

125 In this case, the exchange-value was the money paid for medical services. Because the cesium-137 teletherapy unit was obsolete, it was left behind when the Instituto Goiano de Radioterapia owners moved to new premises. In other words, because the unit lost its exchange-value as medical equipment it was not taken to the new building as the cobalt-60 teletherapy was.

126 It is worth to recall that the ascribed identity to some of those individuals __ scanvengers ("catadores de papel") __ was formulated into taking in consideration the work done with the waste they found on the streets.

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magic ornament. As a commodity, the unit also had exchange-value[127]. The scrap metal thus had many meanings. First, as recycling metal, it provides a means __ money __ for material survival. Second, as a representation of qualities of the supernatural and of beauty, it is connected to affection for kinship, enduring friendship and respect. While the metal remains in the networks of the scavengers, the caesium powder circulated in another sphere, the reciprocity circle. As a gift[128], the radiation material quickly enters domestic spaces due to habitation patterns, as Margaridas' s narrative illustrates.

Scavengers are usually dealer' s employees. Sometimes the scavenger works on his own and after a journey he stops by a dealer to sell what he has collected during the day. For paper and cardboard the scrap dealers usually deliver all the material to an enterprise named COPEL - *Comércio de Aparas de Papel* (Scrap Paper Commerce). In the case of metal, like pieces of old cars, there is an arrangement between the scrap dealer and private car repairing services (i.e., not authorized ones like General Motors, Fiat, and so on). The removal and fragmentation of the cesium-137 assembly followed

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127 *"Exchange-value appears first of all as the quantitative relation, the proportion, in which use-value of one kind exchange for use-values of another kind. This relation changes constantly with time and space. (...) The common factor in the exchange relation, or in the exchange-value of the commodity, is therefore its value"* (Marx 1990:126; 128).

128 As understood by Mauss the gift (*l'échange-don*) implies the obligation to give, to receive and to return. He argues that *"Much of our everyday morality is concerned with the question of obligation and spontaneity in the gift. It is our good fortune that all is not yet couched in terms of purchase and sale. Things have values which are emotional as well as material; indeed in some cases the values are entirely emotional. Our morality is not solely commercial"* (1966: 63) (*"Heureusement, tout n'est pas encore classé exclusivement en termes d'achat et de vente. Les choses ont encore une valeur de sentiment en plus de leur valeur vénale, si tant est qu'il y ait des valeurs qui soient seulement de ce genre"* (1983b:258). Based on these reasonings and on Radcliff-Brown's ethnographic account of Andamans, Mauss built the idea of reciprocity which aim is moral, i.e., to create a friendly union between two people (Id:172-173).

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this scavenger routine until the moment it started to light up. At this point, members of the trading network experienced sentiments other than those aroused by money-making. The commercial routine was thus disrupted by the magic qualities perceived to be present in the unit.

12.1.1. The sequences of the events that produced the radiation-contamination network:

01. R.A. and W.P. removed the rotating assembly from an abandoned teletherapy machine. The shiny stainless steel casing appeared valuable to them and they took it in a wheelbarrow to R.A' s house and put the source assembly in R.A.' s yard. They broke into the wheel and punctured source capsule ___ fragments spread over the yard. R.A. attempted to light it, thinking it might be gunpowder.

02. They sold pieces of the rotating assembly to D. A. F. An employee of D. A. F. (E.) took it to him. He lived on the site of the Junkyard I, which he managed. He went to the garage at night and noticed a blue glow emanating from the capsule. He thought it looked pretty and that the power could be valuable and even supernatural. He took the capsule into the house. He invited friends and neighbors to his house to appreciate what he thought was a "phenomenon". D. A. F. felt important for having such marvelous powder, so he circulated portions of it among relatives. Among them, was his brother Od. F. Some individuals, bewitched by the radioactive glitter, used the powder to paint their bodies. Infinite bright dots scintillated from the body of those who had been favored by the gift[129] (Curado and Silva 1990).

03. The rotating assembly was handled and worked on by D' s employees (mostly I. S. and A. S.) to extract the lead.

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129 Description based on accounts provided by individuals connected with the scenes, i.e., D.A.F. (the scrap dealer); R.S.A. and G.G.S. (Curado and Silva 1990).

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04. D. borrowed tools from O. to break the unit. Then, those tools were stored at O.' s house.

05. D. sold the lead and remnants of the source assembly to J., who owns another Junkyard (III). The transportation was made by truck.

06. K. and an employee at Junkyard II return to IGR to remove the rest of the teletherapy machine to Junkyard II.

07. D. gave fragments of caesium to his friend and neighbor Ed. F.

08. Ed. F. gave fragments of caesium to his brother Er. F.

09. D. gave fragments, the size of rice grains, of caesium to his brother (I.)

10. I. take the fragment to his house located at the same plot of his Junkyard (II)

11. Contaminated papers were sold to COPEL and then transported by truck to industrial cities situated in São Paulo state (i.e., Osasco, Araras, São Paulo and São Carlos).

Thus, the contaminated material circulated along commercial networks as well as through networks defined by kinship and friendship. Networks of commerce, kinship and friendship spread radiation throughout the communities.

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12.1.2. Dispersion of the radiation source through commerce:

IGR ===>R.A.' s house ===> Junkyard I ===>Junkyard II

Junkyard I ==========> Junkyard III

Junkyard I ==========> O.' s house

Junkyard I ===>Junkyard II ===== > COPEL====> São Paulo state

IGR ==========>Junkyard II

12.1.3. Dispersion of the radiation source through gift:

D.A.Fe. donations' ==========> D.A.Fe.'s brother: I. A.F ==========> I's Sister- in- law: L.O.M.S
(D.A.Fe.) (scrap dealer) (lady of the house)
(scrap dealer) Junkyard II Junkyard II
Junkyard I

==========> D.A.Fe.'s brother: Od.Fe.
(Bus driver)

==========> D.A.Fe.' s friend' s: Ed.Fa ==========>Ed.F.' s brother: Er.Fa.
(car repairing painter) (civil servant)
(lived close by D.) (lived in sector near
D.A. Fe. And Ed. Fa.'s area)

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12.2. Habitation Pattern and Social Relations

Anthropological studies of habitation patterns of Brazilian working people point to the sharing of physical space (Durhan 1978; Salem 1981; Knauth at.al 1998). These include:

- extended family living in the same household;
- extended family living in different households at the same plot;
- different nuclear families living in different households at the same plot.

Usually they are miniscule houses and individuals sharing such facilities as: bathroom, yard, and plot entrance.

This arrangement leads to deep bonds between kinship and neighborhood which the individuals perceive as positive because it allows the exchange of domestic tasks and food. Nevertheless they see this urban setting also as source of gossip and discord. In most cases, the notion of kinship involves on one side relationships established through matrimony (consanguinity and affinity) and, on the other side, family alliances confirmed through "compadrio"[130]. In the perspective of poor people, the notion of family is associated with the idea of reliance: individuals one can count on. The definition of family membership is not necessarily attached to a family name[131] but

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130 "Compadrio" is a ritual kinship through which a couple __ a man and a woman __ ("compadres") will act as a child "second" parents. This relationship is established by baptism and can be performed at church or at home. The couple can be extended family members as well as friends.

" (...) *Established in voluntary base, the "compadrio" for one side, defines preferential relationships among relatives, and, on the other side, expands the boundaries of inter-family solidarity, building ritual kinship ties"* (Durhan 1978:72). (My translation of original text wrote in Portuguese).

131 *"The usage of the surname to define family belonging is the Brazilian dominant groups' norm to consolidate the status (and power) assigned by family name. This norm is of small significance among the poor. In this case, as there is no status or power to be transferred, it is the obligation network that defines the extension of family:*

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to the network of people defined by reciprocity. Thus, according to Sarti, the idea of family arises from a moral nucleus around the obligation of giving, accepting and returning. This model implies dense relationships which consists of: consanguinity, affinity, "compadrio", neighborhood, reciprocity and sometimes labor, as in Goiânia Radiological disaster.

Back to Margarida' s narrative. Margarida got involved with radiation exposure because she shared a plot where a neighbor (R.A.) brought a radiation source from the street and tried to open it in a shared yard. Shocked by the neglect which R.A.' s mother[132] exhibited toward him, Margarida provided attention to him. In her case the plot was shared by diverse nuclear families:

PLOT WHERE MARGARIDA LIVED IN 1987:

68, 57th Street-Central Section (former Bairro Popular Section)

Physical occupation:

* one house facing the street
* six "barracões"
* a common bathroom for five "barracões"

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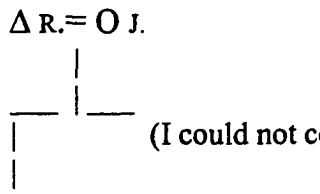
family members are those which one can count with (...)" (Sarti 1996:62-63). (My translation of original text wrote in Portuguese).

132 According to some reports and accounts I collected through interviews, she was also feeling bad and a 57-th street neighbor took her to see a doctor.

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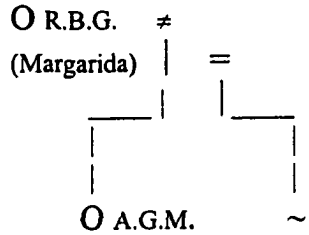
Physical occupation, Kinship and Household : [133]

* House facing the street:

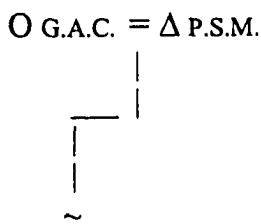


(I could not collect the number of children they had in 1987)

* "barracão" one



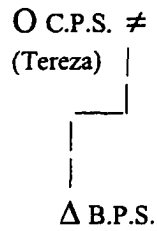
* "barracão" two



133 The signal ~ stands for a foetus.

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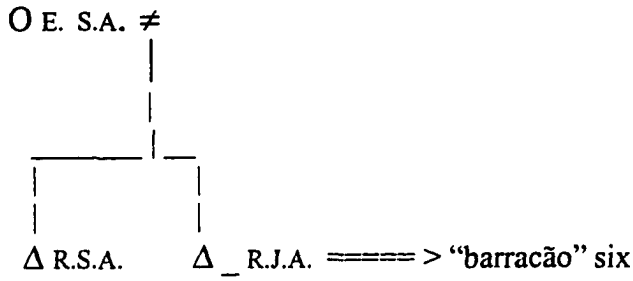
* "barracão" three



* "barracão" four

O ═══ > (It was not possible to determine her name)

* "barracão" five



In the case of D.A.Fe., his brother I.A.Fe., and his friend Ed.Fa., they shared a plot with their extended families and, sometimes, with their employees. As said before, D.A.Fe. lived in the place where his junkyard was located. Some of his employees eventually slept over the papers they collected. G.G.S., one of D' s. employees, in the many occasions we talked, referred to him as "a father" he never met.

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1) D.A.F.' s PLOT: 26-A St. - Aeroporto Section

- Physical occupation:

* D.A.F.' s family house

* Junkyard I

* One "barracão"

- Physical occupation, Kinship and Household:

* D.A.F. Δ = O M.G.F.

* Junkyard I garage: Employees who usually slept there

Δ: G.G.S. (João) Δ: B.A.S. Δ: E.A.S. Δ: A.A.S. Δ: I.B.S.

* "barracão": O: M.P.G.

2) ED.FA.' s PLOT: 15-A - Aeroporto Section

Ed. Fa. lived at the same street as his mother's household __ H. Fa.__ and his brother J. R. Fa.'s family. As usually, he met his brother Er. Fa., when this one stopped by, at his lunch break. Ed. Fa. thought the cesium powder had supernatural powers so he draw a cross in his chest. In one of these gatherings at mother' s house, Ed.

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Fa. gave his brother __ Er. Fa.__ a portion of the caesium, a special gift to a close brother. Er. Fa. took the source to his house, before walking to his job[134].

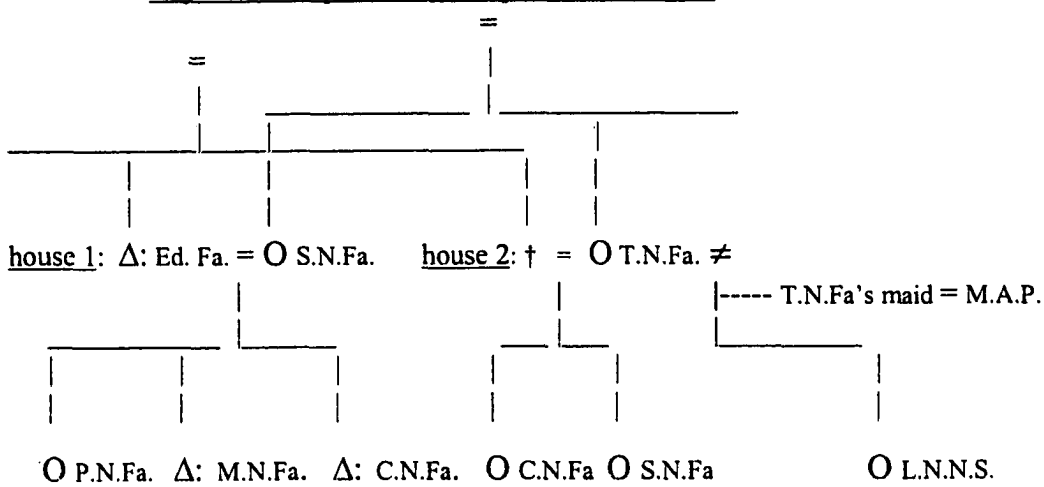
Ed. Fa.' s plot was contiguous to D. A. Fe.__ the back of one connecting to the back of the other. This intersection of neighborhood, friendship and kinship was intensified, in Ed. Fa' s case, because her sister-in-law (T. N. Fa.) lived in the same plot as his nuclear family:

- Physical occupation:

* house 1: Ed. Fa.' s nuclear family house located at the back of his plot

* house 2: T. Fa.' s nuclear family house facing the street

- Physical occupation, Kinship and Household



134 At this point of the disaster, two extended families __ the Fe. and Fa. __ were involved into the disaster.

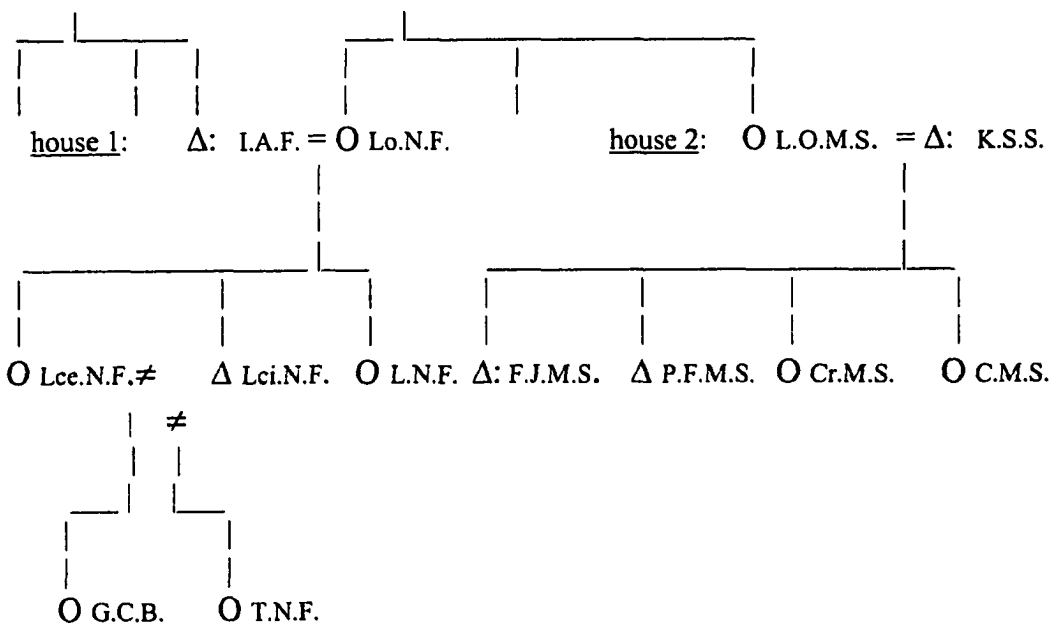
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3) I.A.FE.' S PLOT: 6-th St. - Norte Ferroviário Section

- Physical occupation:

* I.A.F.'s family house
* Junkyard I
* cardboard and wooden rooms
* K.S.S.' s family house

- Physical occupation, Kinship and Household:



* Employee who usually slept there on a separated room: Δ: C.R.O.

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As this analysis shows, particular habitation patterns and dense social relations established among those involved in the collection and segmentation of the rotating source assembly defined the degrees of radiation exposure in this social netwok. These social patters make the Goiânia Radiological Disaster unlike other nuclear and radiological disasters. As I have pointed out in the Introduction, several other elements contributed to this characterization: (a) the delay between the event and its official perception and recognition; (b) the fact that the major focus of the disaster area (Sector Aeroporto) was in a densely populated section of the city; (c) the way that people used the cesium in their daily lives; (d) the lack of an emergency plan for radiation disasters; (e) the physical characteristic of the cesium used in this teletherapy;[135] (f) the weather pattern in central Brazil in September with abundant rain, high temperatures and winds, which contributed to the dispersion of radioactivity.

Based on the literature available, radiation disasters are discussed in terms of: nuclear plant explosions and the release of waste[136]; atomic bomb explosions in

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135 Contrary to the current use of cesium-137 vitrified form that inhibits dispersion (IAEA 1988:88) this was an obsolete teletherapy unit that contained cesium chloride that is highly soluble.

136 For instance:

* Hanford plutonium production facilities, on U.S.A., which in 1945 emitted an estimated 340,000 curies of radioactive iodine considered by Kaplan (1992:1) "*a staggering amount when compared to the estimated 15 to 24 curies released during the accident at Three Mile Island*". In 1973, occurred another release of stored radioactive waste (Caufield (1989: 241);

* Nuclear power plant in Windscale, on Britain, which in 1955 the fuel in the core a military reactor caught fire. According to Caufield (1989: 150) "*The fire burned for 42 hours before it was extinguished. In the meantime, clouds of radioactive materials poured from the reactor's chimneystack. The fallout blanketed the surrounding countryside, and travelled as far as Denmark, Belgium, the Netherlands, France and Germany. The Windscale fire released more than 20,000 curies of radioactivity,*

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Hiroshima and Nagasaki (1945); atomic bombs tests during the cold war period[137];

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thousands of time more than US officials say was released by the Three Mile Island accident in 1979";

* Mayak Chemical Combine in Cheliabinsk, in the Urals, former Soviet Union where in September 29, 1957 an explosion released about 20,000,000 curies of radioactive debris and in April 6, 1993 another release was detected from an accident at the Tomks plutonion facility (Garb 1994);

* Three Mile Island in U.S.A., in 1979 (Ford 1982);

* The Church Rock disaster in New Mexico, U.S.A., on 16 July 1979, when an earthen dam holding radioactive uranium tailing burst, releasing 93 million gallons of liquid wastes and more than 1,000 tons of solid wastes into the Little Puerco River. The owner of the dam was the United Nuclear Corporation. Caufield claims that *"Nuclear officials called it 'the worst incident of radiation contamination in the history of the United States', but because it happened in a relatively isolated part of the United States and affected a dispersed population, most of whom are Navajo Indians, it received far less attention than did the accident at Three Mile Island"* (1989: 150);

* Chernobyl at former Soviet Union, on April 26, 1986 (Gould 1990; Paine 1987; 1989; Stephens 1987).

137 As during the 40'and 50' at the Pacific Islands (Alcalay 1988; 1991; 1992); in the 60'over Norway (Paine 1989) and in the 50' at the Nevada Test Site in U.S. Regarding the experiments in the United States, Schneider says: *"Minutes before the first light of dawn on January 27, 1951, an Air Force B_50 bomber banked left over the juniper and Joshua tress and dropped an atomic bomb on the desert west of Las Vegas. The flash of light awakened ranches in northern Utah. The concussion shattered windows in Arizona. The radiation swept across America, contaminating the soils, of Iowa and Indiana, the coastal bays of New England, and the snows of northern New York.*

Thus began the most prodigiously reckless program of scientific experimentation in United States history. Over the next 12 years, the government's nuclear cold warriors detonated 126 atomic bomb into the atmosphere at the 1,350-square-mile Nevada Test Site. Each of the pink clouds that drifted across the flat mesas and forbidden valleys of the atomic proving grounds contained levels of radiation comparable to the amount released after the explosion in 1986 of the Soviet nuclear reactor at Chernobyl" (1993:XV).

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extensive programs of radiation experiments in humans[138]; military and space disasters[139] and, the loss[140] or abandonment of radiography and teletherapy units, as in

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138 As for instance, the experiments undertook at U.S. Government laboratories and prominent medical research centers, during 1944 and 1974, which involved injecting patients with dangerous radioactive substance like plutonium or exposing them to powerful beams of radiation. The studies included research from 1945 to 1947 at the University of Rochester, at Oak Ridge National Laboratory, at the University of Chicago and at the University of California in San Francisco in which terminally ill patients were injected with plutonium to determine its effects. They also included studies at Oregon State Prison and at Washington State Prison from 1963 to 1971 in which prisoners were irradiated to learn what doses of X-rays made men sterile. And they included studies at the Walter E. Fernald State School in Waltham Mass., from 1946 to 1956 in which mentally retarded children received trace amounts of radioactive minerals in studies of human metabolism. There is a charge also that during the 1960'cancer patients at a small clinic linked with the Oak Ridge National laboratory in Tennessee may have received unnecessary doses of gamma rays in an experiment aimed at learning just how much radiation astronauts could tolerate before becoming sick and choking in heir oxygen masks. (Marshall 1981; "Trying to Build Secret Weapons, U.S. Spread Radiation in 1950's". *New York Times*. December 16, 1993; "Secret Nuclear Research on People Comes to Light". *New York Times*. December 17, 1993; "Energy Official Seeks to Assist Victims of Tests". *New York Times*. December 29, 1993; "Inquiry Into Radiation Tests Extends to Veterans". *New York Times*. December 30, 1993; "In Debate on Radiation Tests, Rush to Judgment is Resisted". .*New York Times*. January 1, 1994; "Government Guinea Pigs". January 9, 1994; "Panel Urges U.S. To Apologize for Radiation Testing and Pay Damages". *New York Times*. October 3, 1995).

139 *"The military also has nuclear accidents, but most information about them is secret. In the United States accidents are classified, in order of increasing severity, as Dull Swords, Bent Spears, Broken Arrows, or, worst of all, Nucflash __ a nuclear accident that could lead to war. The Department of defense has acknowledged at least 27 Broken Arrows between 1950 and 1981. All involved the Air Force. On at least two occasions when planes carrying nuclear bombs crashed, the bombs were destroyed (through they did not explode) and plutonium was scattered over a wide area. The Navy has also acknowledged that it has several hundred pages of documents under the heading 'Summary of Navy Nuclear Weapons Accidents and Incidents', covering the period from 1973 to 1978. The Army claims never to have had a serious accident with nuclear weapons. The Stockholm International Peace Research Institute says that there were 125 accidents involving US nuclear weapons between 1945 and 1976 __ just over on every three months. Military nuclear accidents in other countries are even harder to document than an American ones, but Western intelligence services have details of several Soviet*

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the case of the Goiânia radiation disaster. Records of the contamination of people and environment by radiation disasters has been kept since the 40' s and are thus related to nuclear facilities, industry, research, medical therapy, military activities, and unethical experiments.

In general, those disasters share some common elements. First, there is knowledge about the radioactivity by one segment of the personnel involved. In cases related to nuclear workers and the populations living near nuclear facilities, they are aware of the radiation risks they undertake. Radiation risk is part of the professional identity of the nuclear worker, as the CNEN personnel told me. This is also reported in the ethnographies done at the nuclear fuel reprocessing plants at la Hague in Normandy, France (Zonabend 1993) and at Angra dos Reis Nuclear Power Plant in Rio de Janeiro, Brazil (Silva 1999). Radiation risk involves also the everyday life of people living in communities holding nuclear facilities, and there should be plans for emergency evacuation and training of individuals. As consequence, these people should have some sort of information about the issue of radiation danger. Nevertheless, not everything is

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accidents, including, in the late 1960s, 'a reactor casualty' aboard the Lenin, a nuclear-powered icebreaker.

(...) *Nuclear accidents in space sounds like the title for a grade B horror movie, but there have already been several accidents involving nuclear power units in space satellites, both Russian and American. Plutonium - 238 has been used to supply power for scientific experiments and communications equipment on board of American space satellites since 1961. These units are called space nuclear auxiliary power (or SNAP) devices. On 21 April 1964, a satellite carrying a unit known as SNAP 9-A was unsuccessfully launched. As it-reentered the atmosphere over the Indian Ocean, the satellite and its SNAP unit disintegrated. SNAP 9-A contained 17,000 curies of Plutonium, which returned to earth within several years, and is deposited all over the globe. The plutonium released by this one accident equals five per cent of the plutonium released by all atmospheric weapons tests combined* (Caufield 1990: 243-244).

140 Lost of radiation source (radiography and teletherapy) was registered on Mexico City, Mexico, in 1962; on Algeria in 1978; on Morocco in 1984 and Ciudad Juárez, in Mexico, in 1983 (IAEA 1988: 11; 102).

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disclosed, which points to the second component of these disasters: secrecy. Facts are supressed because of issues related to: Military strategies, intelligence services, world political control, scientific power, and the so-called "governmental concern" over the panic of communities facing radiation danger. The secrecy gives rise to inequalities between two group of peoples: those who have control of the information and consequently power; and, those in a condition of vulnerability due to diverse social factors such as social class, ethnicity, religion, gender, physical disability, nationality, and imprisonment.

Issues related to the loss or abandonment of radiography and teletherapy units forge secrecy, but they raise different kinds of discussion concerning radioactivity awareness. As medical devices, radiation units are under the supervision of nuclear regulations which deal with their use by experts such as physicians and physicists. When the source is lost or abandoned it leaves the controlled space and the domain of the expertise required for the care of this kind of equipment and enters the sphere of the unpredictable. The expert, that is the nuclear worker, involved in the use of the lost or abandoned material is not at risk, unlike the ordinary people who are not trained in radiation safety. Unlike radiation experiments and atomic bomb tests, where nuclear experts have a contamination protocol and where the affected population is defined, this is not what happens when a radiation source is abandoned or lost. Radiation disasters that occur inside nuclear plants which involved nuclear workers and populations trained to follow "emergency plans" imply a certain degree of risk assessment and radiation knowledge. By way of contrasts, the authorities, the workers and, the individuals first affected by the Goiânia disaster were unaware of what was happening to them for about fifteen days.

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While the Goiânia disaster presents features similar to those of other disasters it discloses some peculiarities regarding the core network of those exposed. In other words, the uniqueness of the Goiânia disaster emerged when the virtual contamination of the abandoned radiation unit became tangible reality. The first people affected were those who found the unit and collected it __ the scavengers. Their actions established an association between contamination and professional identity, and called attention to the invisibility of this association in the literature of nuclear disaster and nuclear legislation. In these documents radiation damage among professionals is defined and perceived exclusively in terms of the work related to nuclear activities, which exclude here the scavengers and the "cesium policemen".[141] Because the scavengers' residence pattern involved a shared plot with diverse domestic units, where nuclear or extended families lived in tiny houses sharing communal space, each contaminated individual brought the radiation from the workplace to the domestic space, subsequently affecting neighbors and family members not involved in scavenger work. Not suspecting the harmful effects of their actions, those first affected distributed portions of the unit and the cesium 137 powder to members of this well established social group. Unaware of the damaging it would make to friends and loved ones, they painted the radioactive material on other people' s bodies. As noted earlier, those consanguineal, affinial, "compadrio", neighborhood, and labor relationships which elicit reciprocal behaviors, distributed the radiation powder in the form of a gift. Gifts were also given to family members, friends and neighbors who took care of the first affected individuals to present the symptoms of

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141 It is important to recall here that the scavengers involved in the disaster were defined as victims because they fit the biomedical model of classification and not due to their professional identity. Contrary to the "cesium policemen" who claim a connection between their professional activities and the actions undertaken at the emergency phase of the disaster, the scavengers cancel their identities because of the stigma this work carries.

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acute radiation syndrome. In this way, the bonds and exchanges established by reciprocity amplified the core of contaminated individuals and expanded the physical space of the contamination chain fifteen days before the acknowledgement of the disaster.

12.3. Gender-Based Radiation Circulation

The everyday lives of those most involved with the radioactive source soon started to change. They began to feel ill and had symptoms of nausea, vomiting, diarrhea and changing skin color. When medical assistance was sought, their symptoms were diagnosed as allergic reactions caused by eating bad food or defined as some kind of skin disease.

Noticing that an increasing number of friends, relatives and neighbors were showing the same symptoms, D.A.Fe.' s wife (M.G.Fe.) suspected that there might be some relationship between the luminous material and the health disturbances. First of all she tried to persuade her husband to hand the source capsule over to the Public Hygiene Control Unit. With her husband' s refusal, she took this task upon herself and accompanied by an employee of her husband' s (G.G.S.) who carried the capsule inside a bag on his shoulders, they transported it, partly walking and partly by bus, to the headquarter of the Public Hygiene Control Unit.[142] When she got there, she placed the

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142 At the Public Hygiene Control Unit, "... *Several individuals were exposed to the radiation emitted by the 137Cs source, and at least five received significant radiation doses (from 0.2 to 1.3Gy). No one ever suspected what the material involved actually was. A fire brigade was called because it was thought that the capsule might contain "toxic gas", and the area was cordoned off as precaution.*

One of the technicians from SSD (Public Hygiene Control Unit) and one of the physicians from the Toxicology Information Center of the State Health Department suspected that the material in question was radioactive. They called in a nuclear physicist at 8:30 a.m., on 29 September (day 16) to perform preliminary measurements of dose rates in the immediate vicinity off the source. During the first assessment with a

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bag on the desk of the physician P.M., and told him that it was *"killing her family"* (IAEA 1988:26). By removing the radioactive source from her house, and taking it to a sanitary surveillance organization, M.G.F. launched the process of public acknowledgement of the disaster. This led to the entrance of diverse expert teams to the disaster scene to handle the emergency.

Her motivations for undertaking this action can be understood through the perspective of gendered family health care. Some studies (Cresson 1991; Graham 1984; Scavone 1993;1996) have suggested a relationship between health care and female occupations associated with both public and private spheres of women' s activities. Health care, perceived as part of household work, is understood as female domain. In health institutions, women perform the basic needs of ill people. Within the family, health care is associated with the maternal, and encompasses physical and emotional well-being of all members. M.G.Fe., uninformed on radioactive contamination, was culturally trained to nurse her family, and she did.

M.G.Fe.' s act points to the circulation of the radiation based on space-gendered movement. The radiation unit enters people' s households through male alliances defined by business[143], friendship, neighborhood and brotherhood. While the male network brought the radiation source into the domestic space, the female activities took it to the expert's space.

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scintillometer, the physicist noted that the monitor went of scale. The physicist then ordered the evacuation of the building, and access to the area was controlled" (Oliveira at al., 1991: 18).

143 Although there are women and children working at Goiânia streets as scavengers, there is no female scrap dealer to my knowledge.

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12.4. Radiation in Open Spaces

First of all, the people exposed to radiation were the network of workers identified with collection and break-up of the rotating source assembly. Radiation dispersal thus occurred immediately among individuals with social relationships defined by the scrap trade and habitation patterns: as of consanguinity, affinity, "compadrio", neighborhood, reciprocity, work and gender. At one level, those relations were spatially demarcated according to visible unit parts and/or existing caesium fragments[144]:

* R.A.' s Plot
* Junkyard I
* Junkyard II
* Junkyard III
* Ed. Fa' s Plot
* O.' s House
* Er. Fa' s House
* Headquarters of Public Hygiene Control Unit
* COPEL

Nevertheless, at another level, the radiation exposure network split the circle defined by scrap trade and habitation pattern and reached Goiânia' s open space. According to official reports of the disaster, the collection, break-up and dispersion of the radiation source lasted for about fifteen days. As soon as the teletherapy unit was broken up and the radiation source segmented, a variety of vectors spread the radiation still further: plants, roots, animals, wind, rain. In fact, during the period of at least fifteen days, people circulated in the urban space without knowing that they were carrying radioactive material on and inside their bodies. From this perspective, the disaster is not

144 Besides Ed. Fa's plot, CNEN classified all the others as the main contaminated sites. (CNEN 1987)

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spatially contained and the contamination begins its invisible journey. This raises questions about who is considered to be affected by the Goiânia Radiological Disaster and which force fields define the categorization of victim.

13. BEING CLASSIFIED AS A RADIATION VICTIM

Again, Margarida' s story is a guide to return to the initial moments of the radiation disaster. As an official radioactivity patient, Margarida ' s narrative helps us to think about the different factors involving the definition of the affected population.

> *"So. I was driven to the Olímpico Stadium. They didn' t let us take nothing. The things I left behind, I never saw again. The slippers I was using they asked me to leave behind when I entered the Stadium. When I was going in, I listen somebody saying:*
> *- God Saves! In addition she is pregnant!*
> *We stayed three days at the Stadium, at the barracks. Then the rain fell, it was thunderstorm and some barracks were destroyed. So, at that time, we had to stay at the stalls of the stadium. Up over there.*
> *We had to take three, four baths a day, I would say that we stayed all day inside the bathroom taking a shower. And they passed the machine over our body, when the machine showed that we still had radiation, they took us again to shower. They used coconut soap and much vinegar. My hair was ruined. I suffered too much. And all those showers. They asked us to take a bath, take another bath, and another, and another... and the clothes we were using they took it away and put into the garbage. Everything we touched turned into garbage. I heard later that they took it to the Radioactive Depository. Each time we took a bath they gave us a*

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new cloth. They didn' t even touch the clothes, They just opened the bag and asked us to throw it inside. We had to have too much food. They examined us all the time. They collected urine three, four times a day. And lots of medicine. I started to panic. I said: I left my house, everything... And staying like that: no clothes... Nothing of mine... Be isolated from the world... Left a life behind without knowing what future I will have... Because, you know? I was involved in something that I had any idea what was it... And my daughter crying over me ... She wanted to go back home. Them... They took us to FEBEM. They had to clean the building by themselves to accommodate us. They didn't find helpers to repair and clean the building. People were afraid of radiation. No one wanted to help.

I was worried about my baby. The doctors said that I was having a normal pregnancy. As my boy friend got a minimum dose, they didn' t let him stay with me. He even know where I was. When he found out, they didn' t allow him to be in touch with me, not even talking. At the shelter, I met other families that I never saw in my life. D.A.Fe.' relatives. People who were involved but I didn' t know where they came from.

When I left my house at 68, 57th Street, I didn' t know what was going on. I understood that it must be serious. So dangerous for them taking us from our home. And putting us in quarantine. But I didn' t have knowledge about it. When I asked them, they always answered to me:

__ This is caused by radiation, So... We will explain late... We will talk to you later.

Thinking of those days, the thing that I really missed was my freedom. We could visit nobody because they told we were

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contaminated. I felt bad... Disgusted for not being allowed to leave the isolated place. They said we couldn' t leave because we could feel bad in the street and faint. But I didn' t agree with the doctor because I was not sick. So I answered to him: I will go out. And sometimes I left the isolated place in secret. I escaped. I went to stores, you know? When they discovered, they told me:

__ You know that you are not allowed to go out. You are still contaminated.

I was not feeling sick, so I thought that I could go out and walk in the streets.

Some people tried to take a bus and run away. But they were identified and the police were alerted. I remember P., the baker, and his wife, they decided to go back to Pará state. P.'s wife said to me one day:

__ I have to go away. I miss my mother.

And she started to cry.

So, they planned to escape: I remember very well. I went with them to the bus station. Just to make company, When they were trying to buy tickets, they were identified. Because, you know? Our names and our faces were all the time on the newspapers and on TV network. Then, a social worker arrived and a physician arrived at the bus station:

__ You both have to put on your mind that you are contaminated. You may leave isolation only after the decontamination.

And the social worker said to me:

__ R.! You cannot go out. You are a victim. You are a caesium victim. You have to make your own mind. You are still in danger. You are still contaminated and you can contaminate somebody else.

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I remember saying:

__ No! there is no such thing any more. The contamination is over.

Only after the psychologists came, they explained to us the damages it could make to us. Then, the entire world knew what was happening in Goiânia, but not us. We didn' t have this knowledge. I was understanding that it was dangerous... but not that all. Later, when I started to understand a little bit more, then I became scared. Really scared. I worried about my kids. Even today, I am scared of cancer, leukemia. And if something happen to my children? Because in 1987 I was pregnant, I really got frightened. I even told the doctor, that if the baby were to be born with some deficiency, I would rather have an abortion. But he always declared:

__ No. Calm down. Your son will born perfect.

But, you know, they said those things just to comfort me. To relieve, you know? Because, I presume they didn't' t have this kind of knowledge and they were not sure about what was going on with me. I perceived they were very concerned. They examined me all the time. Constantly. They measured my belly, I did many ultrasound exams to see the baby. Then, the baby was born. They said:

__ Everything is normal.

Then, they started those examinations.. And did exams... And collected blood and took measures and collected the placenta and sent it to be analyzed in Rio de Janeiro. And they said:

__ It' s ok.

But, what they didn' t tell me is that my son was born contaminated. I just knew it when I saw his medical record... I

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looked at it on the doctor' s board... I looked on his file... All those examinations... Then I found out that he was born contaminated... And then I remember the examination they made of my milk... And when I saw the file, they told me that my son was contaminated through my milk. That my milk was contaminated. And I breastfeed him.The doctors had a debate among them. And they did all kinds of examination. During three years.

After the decontamination I had to start my life all over again.

My son got 20 rads[145]*. My daughter got 30 rads and I got 120 rads.*

I belong to Group 1 and my children to Group 2.

Currently I know that I am a direct victim of the disaster.

Margarida' s remembrances indicate that her understanding of being affected by radiation emerges from concrete experiences she overcomes in her daily life. While the emergency team tries to impute to her a new identity __ that of a contaminated person __ she refutes the label because she does not feel sick. Her perception of her new identity is engendered while confronting circumstances defined by the radiation disaster crisis: loss of freedom; segregation; body scrutiny; secrecy, and as time passed, by the encounter with compensation measures, resettlement, biomedical follow-up and governmental pension. In this context, a new discourse is articulated: a "doses' s" discourse. During the encounters I had with individuals officially defined as affected by the disaster, they introduced and identified themselves pointing to the doses they got: 20 rads, 30 rads, 120 rads, suggesting that they had assimilated some of the biomedical criteria of victimhood. Some referred to the physical marks inscribed on their bodies as

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145 Rad: Radiation absorbed dose.

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further evidence that they belonged to the category of victim. The cesium, in contact with the skin, burned their bodies and the scars remain along with the cosmetic surgeries they undertaken. The initial illusion of having sparkling bodies when contacted with the cesium powder turned into a permanent and different form of embodied memory. Their 1987 fantasies had become marks of harmful disaster, a physical remembrance they use politically when they wish to reaffirm their identity as victims. In their ordinary life, however, they try to hide the marks to avoid discrimination.

While radiation' s major characteristic is invisibility, disaster experts center their classification on the physical and measurable connection individuals display on their bodies. According to nuclear experts the amount of the dose is equal to the disaster' s impact on a person' s life and determines the amount of money compensation, as well as the inclusion in a health care monitoring program. The disaster experts' classification groups together dissimilar individuals surviving the same experience, and excludes those who were not mathematically evaluated during emergency phase, as is the case of the "cesium policemen". This set the base for continuing conflict over the years. It sets up an opposition between diverse people who had worked and lived on sites related to the radiation exposure, and the team of disaster experts. The disaster set afoot a continual process of negotiation and re-elaboration. According to the disaster experts, the disaster is contained in time through the use of mathematical and physical measurements, which domesticate and frame the disaster as an event that occurred and is located on the past. One way to look at such a field of forces is to examine the creation of two associations: the Leide das Neves Foundation, a governmental institution, and the Victims Association, a grassroots organization.

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13.1. Official Perception of the Population Affected by the Disaster: Brazilian Nuclear Experts and the Fundação Leide das Neves Ferreira

The treatment and care of people affected by the Goiânia disaster has been described and discussed in many scientific and professional meetings.[146] Three International Conferences (1988, 1990, 1997) were held in Goiânia. Actions undertaken since the unveiling of the disaster have been indexed chronologically, and the affected population labeled and classified. According to the International Atomic Energy Agency (IAEA) report, medical responses were classified as: (a) Initial and emergency response (1988: 41-60) and, (b) Long term control.

Several Brazilian and international specialists[147] worked in the first phase

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146 For Instance, a review meeting was organized jointly by Brazilian National Energy Commission (CNEN) and IAEA, in Rio de Janeiro, 1988; eight papers were presented at the Thirty-Third Annual Meeting of the Health Physics Society, Boston, July 4-8, 1988; member of the *Fundação Leide das Neves* participated in various international conferences as the "Children and Radiation" Conference. Trondhaim, Norway at June,1993. More than three hundred references are indexed by Centro de Informações Nucleares __ CIN (Nuclear Information Center), a CNEN department.

147 700 workers participated in response to the disaster, including professionals from CNEN staff, personnel from Brazilian army, NUCLEBRAS, FURNAS, the state of Goiás, and from private companies. (IAEA Bulletin, 4.1988:10). In October, the Brazilian Government asked the International Atomic Energy Agency (IAEA) in Vienna for help. The international team included two U.S. radiation experts (Robert Ricks and physician Clarence Lushbaugh of the Radiation Emergency Center \ Training Sites (REACTS), a World Health Organization; Juan Jimenez of Buenos Aires; Gunter Trexler of Munich; and George Seliodovkin a hematologist from Moscow, who had treated the victims of Chernobyl. Another international specialist, Dr. Robert Gale, treated the victims during this emergencial phase. His participation and the use of GM-CSF was the subject of one of the medical and political debates raised during this disaster (*Science.* 1987, 238 (4830):1028-1031; *Science.* 1988, 239 (4838).

GM-CSF (Granulocyte Macrophage Colony Stimulating Factor) is a new hormone-like drug. It "was used in the treatment of overexposed persons, with questionable results". (*IAEA Bulletin 4.1988*:13)

"GM-CSF is one of a family of hormones that stimulate the bone marrow

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under the direction of CNEN. A Brazilian nuclear experts team, whose members originated from such diverse institutions as Indústrias Nucleares Brasileiras (NUCLEBRAS), Furnas Centrais Elétricas and Marcílio Dias Navy Hospital, and who defined the individuals considered affected by radiation. Then a protocol for medical follow-up was established:

> *"The individuals to be considered under this program are those that have been accidentally submitted to a external, global or local irradiation, capable to provoke clinical-laboratorial manifestation as well as those that have presented a significant level of external or internal contamination."*
> (Oliveira at. al 1987:2-3)

The first medical intervention was to decontaminate people. Two hundred and forty-nine individuals were considered "contaminated," (IAEA 1988:2) as contaminated, as was the environment around them. This group was then divided based on the level of contamination: (a) some had "only" shoes and clothes contaminated by the cesium-137; (b) 129 persons had internal and external contamination. (Fundação Leide Das Neves Fereira 1990:21.) The remedial action focused on finding the contaminated individuals, isolating them and undertaking the procedures involving the physical decontamination of bodies. Physical bodies were isolated, secluded and given what the radiation specialists called "the decorporation of cesium" by using "Prussian Blue." To be rescued for "social life," those most contaminated bodies had been measured in different

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to produce white or red blood celles. GM-CSF specificaly stimulates neutrophils and monocytes, the white blood cells that kill microbes. GM-CSF is not approved for medical use in the United States or Brazil, but is undergoing clinical trials here to determine its usefulness in boosting white cell production in patients with suppressed bone marrow (Science 1 May. P. 517)" (Science 20 November. P.1029)

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ways. Samples of blood, urine and feces were obtained daily to assess the level of internal contamination. A whole body counter was constructed to find out the total doses of each individual. A detailed process of decontamination was undertaken:

> *"Contaminated clothing was removed and all (individuals) were decontaminated by taking several baths with soap and water."* (IAEA 1988:42). "

> *Skin decontamination was performed on all patients using mild soap and water, acetic acid and titanium dioxide. Decontamination was only partially successful since sweating resulted in recontamination of the skin from internally deposited cesium-137."* (IAEA 1988:43)

> *"Decontamination of the patients' skin and dealing with desquamation from radiation injuries and contaminated excreta posed major problems of care. Daily hematological and medical examinations, good nursing care and bioassay of blood cultures contributed to the early detection and therapy of local systemic infections."* (IAEA 1988:2)

While acting on the decontamination and care of disaster-indexed victims, the nuclear medical team acquired medical care expertise for intervening in radiological emergencies. This knowledge was transmitted in scientific papers delivered at various international and national meetings. The CNEN institution legitimized this expertise and relied on these experts' knowledge on various occasions in the aftermath of the disaster, as in the case of the "cesium policemen". Through the intervention at the initial response to the disaster, this nuclear medical team became the sole institutional recognized as competent to issue pronouncements about cesium 137 radiation effects on human bodies. Supported by this knowledge, the IAEA report (1988:2) claimed four deaths and two hundred forty nine individuals as having been contaminated by the Goiânia Radiological Disaster.

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While some members of CNEN, a federal institution, were involved in treating "contaminated people and environment," its board was involved in political struggles with the local Government about: (a) localization and construction of the waste repository to fit the radioactive waste produced by those characterized as "contaminated" people; (b) responsibility for the disaster; (c) adequacy of procedures taken; (d) definition of "safe" levels of radiation for the liberation of "contaminated" areas. Along with those issues, the Government of Goiás also faced the discrimination against local industrial and agricultural products as well the stigmatization of the local population. The event had a significant impact on the economic stability and the social/political fabric of the state of Goiás. (Petterson 1988)

Many local business organizations made a collective effort to face the stigma. The Goiás Commercial and Industrial Association (Associação Comercial e Industrial de Goiás) gave financial and political support to the Federal University of Goiás for the creation of a research center: *Núcleo de Apoio ao Acidente Radiológico de Goiânia* - NUAC. The Goiás economic sector, usually not concerned with scientific matters, held a collective effort to overcome the unknown, i.e. radiation disease, through the production of knowledge. The association between knowledge and economic regional power was clearly established as attested to by important financial contributions made by Encol S/A and *União Democrática Ruralista Nacional* - UDR (NUAC Archives).[148] The first of those (ENCOL) was a major name during the eighties in the

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148 In 1991, NUAC was discontinued due to lack of financial support. Then, the local economy was already recovered from the impact of the disaster. Consequently, ruralist leaders and city business persons withdrew their financial support to advance knowledge on radiation issues. According to NUAC documents, the common effort carried by the University center and Goiás economic sectors was restricted to the emergent phase, when they faced the visibility of radiation on the decrease commercialization and consumption of their goods. Also, the research financing foundation called *Financiadora de Estudos e Projetos* - FINEP, whose headquarters are

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local building industry; the second (UDR), a right wing organization whose national leader originated from Goiás[149] and represented cereal farm and cattle ranch sectors, an influential sphere at the local level. The associated effort's of the two aimed at assuring the maintenance of economic production in the disturbed situation supported by the scientific knowledge which was to be provided by the NUAC:

> *"The regrettable radiological accident that occurred in Goiânia, in the second half of September, still is and will represent for many years, a source of great concern for the population, what is already attested by important consequences left on cultural, economic and social activities of the state of Goiás.*
> *Thus, it became crucial for facing the crisis an associated effort of all the community sectors. To accomplish this endeavor, it is decisive the investigation of the disaster's real dimensions, its probable consequences along with the assurance of the best modern science resources for the*

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in Rio de Janeiro, approved eight out of twelve projects submitted to appreciation. Nevertheless, the resources were never delivered. Thus, the compromise of NUAC in understanding the environmental, social and health impact of disaster in order to inform the community and help the population to face the 'unknown' was never totally accomplished.

149 In May 1985, part of the Brazilian landowners created, in Goiânia, the UDR __ União Democrática Ruralista. From 1985 to 1988 the organization hold considerable political power in the Central-West and North states as well as in the cattle raising region of São Paulo. The UDR represented landowners response to the *I Plano Nacional de Reforma Agrária* _ PNRA (First National Plan of Agrarian Reform) established by the "New Republic" in the context of political transition from dictatorship to democracy. The PNRA recuperated the 1964 *Estatuto da Terra* (Land Law) and proposed the distribution of land in order to achieve the progressive elimination of the latifundium (large estate). Along with actions undertaken at institutional level, the UDR acted as a paramilitary organization in confrontation with the "posseiros" __ individuals that occupy and work the land without having the legal ownership over it. The UDR promoted auctions of cattle in order to buy arms and to have media attention. In 1987, Salvador Farina, one of the organizations leader, confessed that they have bought around seventy thousand arms. In fact, the violence at the countryside intensified from 1985 on (Souza 1994).

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> *victims and the release of accurate disaster information to the local population."*
> (NUAC - Proposta de Implementação das Atividades do Núcleo).

The regional economic sector undertook additional symbolic measures. For instance, the transportation of goods and merchandise at inter regional levels was used in an effort to respond to discriminatory acts. Thus, trucks coming or leaving the city of Goiânia carried slogans written in black letters over white fabric and tied to the truck's body saying:

> * *"The radioactive accident did not kill Goiânia, but you can kill it with your discrimination".*
> *(O Acidente Radioativo não matou Goiânia, mas você pode matá-la com sua rejeição);*
>
> * *"Goiânia regains its breath and Eliane & Soares follows this move".*
> *(Goiânia respira aliviada e Eliane & Soares acompanham esta virada).*

It is worth recalling that State of Goiás holds a weak political, intellectual, and economic position as compared to other states of the federation. In the very beginning of the aftermath of the disaster this situation reached a critical condition because of the discrimination. In this context, in February 1988, the local government created the Leide das Neves Ferreira Foundation[150] (FUNLEIDE) the name is a homage

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150 FUNLEIDE was created by Goiás State law nº 10,339, dated of December 9, 1987 and established by Decreet Nº 2,897/88 from February 11, 1988, signed by Governor Henrique Santillo. It started to function on February 26, 1988 at the *Public Hygiene Control Unit* (Vigilância Sanitária) building, located at 16-A Street, Aeroporto Section where M.G.L. left the cesium 137 capsule. It is subordinate to Goiás State Health Department. The Foundation aimed to give *" (. . .) continuity to work already been developed by Comissão de Acompanhamento das Vítimas do Césio __ COCÉSIO __* (Commission for Cesium Victims Attendance) *installed at FEBEM to deliver assistance to disaster patients."* ("Instalado o Órgão que Acompanhará Vítimas do Césio". Newspaper *O Popular*. Goiânia February 02, 1988.

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to a six-year old child, one of the four disaster victims that died in October 1987.

The Foundation was established with two major objectives that mixed assistance and scientific research, which is: (a) to give direct and permanent assistance to 107 people, including health care, pension, economic compensation, housing, basic food; (b) to promote research on the effects of radioactivity.

> *"The government of the State of Goiás created the Fundação 'Leide das Neves Ferreira' with the aim of giving support to the people involved in the radioactive accident in Goiânia. At the moment 54 people are receiving medical observation and also laboratory, psychological, odontological and social observation. But the population that should receive this observation will be increased, in the beginning to almost 550 people, this number consisting of individuals who worked on the critical phase of the accident and were exposed to contamination and/or radiation with the Cesium - 137. The neighboring (sic) population of the focuses of the contamination will be included in a project of evaluation and research of (sic) Micronucleus. The global observation will be of 1.104 people.*
> *The importance of inclusion of these last groups in the observation is connected to the evidence that RBE for the late effects may be greater to low than to high doses of irradiation (sic)."*
> (Fundação Leide das Neves Ferreira 1988. Medical Nucleus)

The foundation was designed as a response to two different political contexts: (1) a response to the pressures of the 57th Street inhabitants, where the teletherapy unit was first disassembled; (2) a privileged opportunity for the state of Goiás to produce "scientific knowledge," and gain national and international prestige, an aim that is on the front page of the Foundation Bulletin, published in English.

> *"The decision of the Governor of the State of Goiás, HENRIQUE SANTILLO, a Medical Pediatrician, to create a scientific research institution, unknown in the Center-West Region of Brazil, demonstrates his concern with the development of science in a region traditionally forgotten by Brazilian administrators. More than this, it proves that a Governor*

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should act in this field, as well as acting in questions of a purely political nature.
The main concern of the Foundation is based on the implementation of research in the area of medicine, as well as fostering information exchange with the more advance centers in the world. Brazil has already entered the Nuclear Energy Club and the organized society must now accompany and supervises this development. No doubt the Foundation will contribute, in its own specific and clear way, a great deal in this new technological age. As a consequence of the tragedy in Goiânia, the Governor of Goiás instituted the Foundation, which today forms part of the national and international scientific world and is open to the exchange of ideas, experiences, studies, research and results, which aim to protect human beings and the ecological system from the misuse of nuclear energy and its subsequent consequences. Only a scientist in politics could understand these new circumstances."
(Fundação Leide das Neves Ferreira 1989)

To carry out its actions, the Foundation categorized the individuals affected by the disaster. Thus, to the 1987 nuclear experts' categorization of 249 "contaminated" individuals, FUNLEIDE adds another classification totalling nine hundred four people. Based on the standards adopted by IAEA and on the suggestion made in a PROTOCOL conducted by Dr. Alexandre de Oliveira (FUNDAÇÃO LEIDE DAS NEVES FERREIRA. Report of Activities 1988a. Medical Nucleus), the patients who needed to receive clinical observation were classified into four groups.[151] The

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151 "*Three groups receive medical observation, of which the first will be considered of 54 people who were contaminated. The second group will be formed by 50 people. According to the suggestion given by Dr. Alexandre de Oliveira, the adopted standards for the inclusion of the people in the groups to receive medical observation, were considered by the Nuclear Regulatory Commission and Energy Research and Development Administration from the USA, for significant doses of radiation.*

1. Whole body dose, osseous medula (sic) and gonods (sic) - 0,25 GY (25 rads)
2. Superficial dose (skin) of extremities - 6 GY (600 rads)
3. Thyroid dose or orther (sic) organs - 0, 75 GY (75 rads)
4. Corporal activity - equivalent to 1/2 LIA (annual limit of incorporation) for Cesium-137, respecting the rates.

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So then 04 populations are receiving medical observation defined as Group I, II, III, IV.

A) Group I (54 people)
STANDARDS
1. Patients with radiodermites and/or
2. Dosimetry of the whole body - 20 rads and/or
3. Corporal activity equivalent to 1/2 LIA = 50 MCI.
PROTOCOL
1.Monthly clinical consults,during the 1 st year after the accident;
2.Laboratorial exams of routine (platelets, hemogram, and EAS) every 2 and 2 months up to the 2nd year;
3. Semestral complete biochemistry;
4. Mielogram (sic) every 6 and 6 months;
5. Medula biopsy every year;
6. Spermogram twice in the1st year;
7. Immunological status - anually (sic) after exposition;
8. Cytogenetic dosimetry twice a year until the 3rd year after exposition;
9. Back of eye - twice a year;
10. Other exams; according to medical indication (tomograph, resonnacesic (sic), cytogenetic, cintilography).
11. Photographs of the radiolesions every fortnight.

B) Group II (50 people)
STANDARDS
Relatives or contactents of the direct victims, whose register of irradiation do not reach the registers of group I (20 rads; LIA; 50 MCi) without radiodermites.
PROTOCOL
1. Clinical consulte every 4 and 4 months;
2. Laboratory exams of routine every 4 and 4 months until the 2nd year;
3. Other exams: according to medical indication.

C) Group III (+ - 300 people)
STANDARDS
Professional that worked and work with material contaminated by the Cesium-137 or with patients irradiated or contaminated by the Cesium-137." (Id.)
PROTOCOL
1. Annual clinical consults;
2. Annual laboratory exams of routine; (hemograms, EAS);
3. Other exams: according to medical indications;
D) Group IV (500 people)
STANDARDS
Neighbor (sic) population of the 7 first (sic) contaminated points written below:

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parameters used were individuals' level of radiation, professional contact with affected people and domicile in the neighborhood affected by the disaster.

In my view, FUNLEIDE classification raises two sorts of problems. One concerns the difficulties, in practical terms, to assess all the professionals that worked with the material or with patients irradiated or contaminated by the Cesium-137, as well as in the neighborhood of the seven first contaminated points. For instance, how could they answer such questions as: At the initial phase of the disaster, how were the at least 300 non-nuclear professionals that deal with contaminated material and contaminated patients measured? How were the neighbors identified, considering that people were afraid and ran away? The 1997 "cesium policemen" struggle over the medical validation of their claimed illness and the nuclear experts negative response, claiming the impossibility to determine the radiation causation, is an example of the kind of difficulty I am referring to.

The second problem is related to the fusion that FUNLEIDE made of its own parameters with those established by Oliveira' s criterion because, I argue, there is a contradiction between those two models. While the Foundation includes disaster workers and neighbors, Oliveira' s 1987 document talked strictly about clinical-laboratory manifestations, and people's significant contamination as elements to be observed

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1. *Roberto's house - rua 57 n.68*
2. *Ovidio's house - rua 63 n. 19*
3. *Rua 26-A and rua 15 - Dump yard I - Devair*
4. *Rua 6 Qd. 'Q' Lt. 18 - Dump yard II - Ivo*
5. *Rua P-19, Lt.04 - Dump yard III - Joaquim*
6. *Rua 17 Qd. 70-A Lt. 2613 - Ernesto Fabiano*
7. *Rua 16-a n. 792 - Sanitary Vigilance (sic)*

PROTOCOL
Project of Micronucleus.
(Fundação Leide das Neves Ferreira 1988. Medical Nucleus)

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regarding medical follow-up. Oliveira' s medical statement does not support FUNLEIDE social model of classification.

But this is an imaginary contradiction. Although the fact that the FUNLEIDE classification of the four groups adopted social and medical criteria, in the everyday practice of medical assistance delivered under FUNLEIDE control, the Foundation adopted only the biomedical model defined by Oliveira. During my fieldwork observations and interviews, I noticed that the contradiction I referred to exists only on the printed documents because Oliveira' s medical statement was the model that FUNLEIDE used both in its medical assessment and in the classification of victims' eligibility for financial compensation. FUNLEIDE' s categorization of individuals is not followed by effective measures providing medical care to all those estimated as affected. The fact is that health care and medical follow-up were never provided to the people defined within FUNLEIDE' s four groups. Contrary to what was stated in the above-mentioned document, the only persons to receive medical support were those fitting the criterion defined by the nuclear experts team, that is FUNLEIDE Groups I and II.

Besides the contradiction between Oliveira' s categorization and FUNLEIDE' s 1988 proposition of Four Groups, another problem emerges regarding the perception of the affected population. In opposition to the proclaimed four groups, when I looked at the FUNLEIDE database I found a list of names assembling people into Three Groups[152]. Yes a third classification was presented to me when FUNLEIDE Social Worker Section, in 1996, delivered a list of the names of people effectively receiving medical care. According to this last list, the population was reduced to two Groups as follows: Group I: 54 individuals and Group II: 66 individuals, totaling 120 persons.

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152 Three groups totalizing 638 persons, as follow:
Group I: 60 individuals; Group II: 59 individuals; Group III: 519 individuals.

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While the number of persons considered affected was thus decreased enormously, the FOUNDATION created a new category __ disaster second generation __ that is, children born after 1987, in which one of the parents were classified as Group I and II according to the initial medical protocol (see footnote 91). This new category is named F1 __ Filhos 1 (children 1) and is arranged as a sub-section of Group II. This new class incorporates around 28 children: (a) children from mothers who were pregnant when they were affected by the radiation (intra-uterus life affected by the radiation); (b) children born after the disaster from parents classified as "radioacidentados" (father and mother or just one of them). In this case, the mothers were not pregnant when they were exposed to the radiation.

The FUNLEIDE project was designed also to evaluate the composition of each group in order to assure compensation to individuals estimated as the most affected. In defining the level of victimization, the project set up the basis for compensation and this became a crucial point of struggle between the affected population and the Leide das Neves Foundation (FUNLEIDE). A governmental pension, at Goiás State level, was granted to the victims on October, 1989. According to official document, the population was registered in four groups following radiation dose rank which parallels the proportion of money allowance. [153] On December 24, 1996, Fernando Henrique Cardoso, the

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153 This document states:
* Group I = Incapacity to work
Pension granted: 22 M.V.R.
Number of people: 11
* Group II = Equal or plus than 100 Rads
Pension granted: 15 M.V.R.
Number of people: 06
* Group III = Between 100 and 50 Rads
Pension granted: 11 M.V.R.
Number of people: 06
* Group IV= Less than 50 Rads

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Brazilian President, signed a federal law granting federal pensions to the victims. As in former case, individuals were ranked according to the level of proved contamination and the pension value corresponded to the degree of marked disaster effect.[154]

Besides the fact that the FUNLEIDE 1988 document shows the authorities aim to categorize people beyond mathematical parameters, physical marks of the disaster remain the sign for legal compensations. In sum, the officially adopted recognition of "victim" emphasizes the materiality of radiation in people's bodies, which would be defined through equipment and measurement techniques. That is, the distance the individuals were from radiation source; the time expended inside contaminated sites; the

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Pension granted: 8 M.V.R.
Number of people: 94
Amount of population receiving Goiás State pension: 117 individuals.
(Law Nª 10,977 from October 03, 1989. *Diário Oficial.* Nº 15,819. October 10, 1989)
Pension money values goes from U$ 73.08 to U$ 130.00 monthly.

154 This document states groups and parameters for receiving the pension:
* Group I = Incapacity to work
Pension granted: 300 U.F.I.R.
* Group II = Equal or plus than 100 Rads
Pension granted: 200 U.F.I.R.
* Group III = Between 50 and 100 Rads
Pension granted: 150 U.F.I.R.
* Group IV= Kin of contaminated or irradiated people, born with proved anomaly due to parents contamination
Pension granted: 150 U.F.I.R.
* Group V= Individuals under Fundação Leide das Neves medical control since its creation and classified within Foundation original Group I or II.
Pension granted: 150 U.F.I.R.
* Group VI= Vigilância Sanitária workers with contamination attested through exam
FUNLEIDE is defined as the legal authority to organize a medical committee to classify the individuals according to the parameters above established.
Pension money values goes from U$ 137.8 to U$ 276.6 monthly.
(Law Nª 9,425 from December 24, 1996. *Diário Oficial.* Nº 250. December 26, 1996)

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sound of the Geiger machine; the results of blood, urine and feces exams, and doses detected by an equipment called the Whole Body Counter are the only parameters for providing legal compensation and inclusion in health care monitoring programs.

This is a model founded on mathematical principles. However, those who felt the impact of the disaster on their mental health, professional activities, family and love relationships are not measured by the nuclear experts machinery, and are not considered as belonging to the affected population. In addition, this categorization froze the victims to those individuals detected during initial response to the disaster because this measurement works at the time of radiation exposure. Although FUNLEIDE' s list of the population affected varies in the number of individuals inventoried, as well as groups and sub-groups at the public scene, the authorities insist on a rigorously defined affected population. This is part of the symbolic control of the disaster. From the nuclear experts viewpoint, the aftermath of the disaster cannot generate new victims because it would imply re-assessment of actions undertaken at the moment of the disaster' s remedial phase in 1987. This is one of the reasons for containing the 1997 "cesium policemen' s" claims.

The definition of the population officially categorized as affected by the disaster segmented the disaster-affected population into levels of victimization according to radiation dose exposure. This ranking generates internal conflicts __ even family conflicts __ when people compare radiation marks, pensions granted and the inclusion / exclusion in the same or different victim class. In this context, the search for a higher level of victimization through radiation marks, exposure doses and memories of living and / or working in contaminated sites is understood as a search for better compensation and inclusion in a health care monitoring program. Secondly, various classifications intensify peoples' suffering due to instability of belonging variously to one or another

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class. In 1997, during the Goiânia International Conference - *Ten Years After* , D.F.Fa.[155] aroused controversy by publicizing changes of her dose estimation and consequently modification and reduction of pension. This added a new perspective on the mathematical estimation of doses.

13.2. Grassroots Organization: Associação das Vítimas do Césio-137

How did the affected people refer to themselves in this complex categorization involving notions of contamination, victimization and the circulation of different lists? One way to look at the self-identification of the individuals affected by the disaster is through the documents and speeches of the members of the "Associação das Vítimas do Césio-137."

> *"A group of the 57th Street inhabitants took the initiative of founding an Association in response to the absolute lack of information and assistance to the individuals indirectly affected by the radioactive accident. We asked the governmental institutions responses to our claims with no satisfied answers. When we formalized our requests, mostly on health issues, the State Government asked us to properly organize into a legally registered association. Otherwise, the authorities said, they could not address our claims.*
>
> (...) *Thus, people from various zones affected by the disaster constitute the association. People whose lives were modified by the accident in various ways: both in terms of health and in terms of losing their homes and jobs. Lives affected by the dislocation of small businesses; the deterioration of property value; the disruption of kinship, friendship and the neighborhood by stigma raised from the disaster.*
>
> (...) *We include as the population affected by the disaster: the people directly contaminated; the neighbors of the sites considered as radiation*

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155 D.F.Fa. got contaminated when her husband, Er.Fa., received a portion of radiation source from his brother and brought it home and left it for a while over his desk table bedroom. D.F.Fa. hold it in her hands. Then she got scared and threw it into the sanitary. Her house turn to be one of the most contaminated site and is new in Goiânia radiological disaster literature as "Casa da Fossa" ("House of the Cesspool").

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> *focus and the Abadia de Goiás community compelled to live with the repository of radioactive waste. Thus, we share the same struggle."*
> (Associação das Vítimas do Césio - 137. 1989)

On December 13th, 1987, the inhabitants of the 57th Street organized an association that resulted from: (1) the astonishment of the local population about the secrecy and methods used to evacuate the inhabitants of affected areas; (2) the call for a broader definition of what characterizes the population affected by the disaster; (3) the confrontation with CNEN and Leide das Neves Ferreira Foundation for better health care with a broader notion of health (i.e., involving physical and mental health, and attention to the nutrition)[156]; access to individual information about the results of the tests taken at those institutions; and compensation for the material losses; (4) the articulation with national and international grass-roots organizations and with local universities to obtain support for their demands.[157]

Here, victim identity is constructed in confrontation with institutionalized biomedical power. According to the members of the association, the victimized body is

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156 For instance, under Association 's pressure, number and composition of the "Basic Food Basket", provided by the Foundation to "direct" victims altered. On March, 1988 the Foundation furnishes 72 baskets to 32 "families". On April 1988, the number changes to 127 baskets to 35 "families". The members of the Association request the additional item - beef- to the following: 1Kg of sugar; 2kg of bean; 5 kg or rice; 2 liters of oil; 2 packages of "Bom-Bril"; 3 units of soap; 2Kg of powder milk. (FUNDAÇÃO LEIDE DAS NEVES FERREIRA. July 1988b. Acidente Radioativo de Goiânia. Relatório de Atividades).

157 During the crucial moments of the disaster, the Association asked for the help of a German Green Party member to measure the level of radiation at the Aeroporto Section. Then they used these numbers to confront the radiation numbers proposed by CNEN technicians.

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not just the visible physically-affected body, as in the CNEN notion of contaminated individuals. They demand that "invisible" marks of the disaster, such as disintegration of social networks, kinship relations, and social and economic dislocations should be included, which can be considered in terms of the concept of social suffering (Kleinman at. al. 1997). To do that, they categorize people as "direct" and "indirect" victims. The first corresponds to the nuclear experts' notion of "contamination." The second, the groups of people who did not have direct contact with the radioactive source. But everyday discourse reveals the internal contradictions such a separation into different social groups. The first distinction is based on one's place in the local economy (i.e., unemployed, underemployed, low skill workers, autonomous small business and liberal professionals). Second, they attempt to isolate those considered by the majority to be responsible for the disaster. Later, in 1991, the notion of victim acquires another characteristic. It is not just an identity built in struggle, a "mask of confrontation", to use Joan Vincent's notion (1974). The victim takes on the connotation of people twice victimized: by the disaster itself and by the lack of continuous financial and political support for promised health treatment.

After a successful effort in getting some radiation patients to undertake health treatment in Cuba[158], it appears as though the Victims Association had chosen to

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158 In August 1992, thirty-four children and sixteen adults, members of the "radioacidentados" group, went to Cuba for medical investigation. They stayed there from August 15 to September 09, 1992. This trip resulted from a scientific accord signed between Cuba Government and the states of Goiás and Rio de Janeiro, after request made by the *Associação das Vítimas do Césio 137* during the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil, in June 1992, knew as Rio- Eco 92 (IBRACE 1993).

In 1990, Cuba established a program conceived initially to attend children affected by the Chernobyl disaster. Till mid 1997, 16,000 individuals, including children and adults, from Brazil, Ukraine, Russia and Belarus have been treated by this program (Garcia at al. 1997; Lorenzo at al. 1997).

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remain silent. The first president of the organization retreated from any disaster related issue, and most of the active members did not want to talk about the Goiânia Disaster. In spite of the grassroots organization's silence, individuals' voices claiming an increase in cancer cases are heard in areas close to spaces contaminated by the Cesium -137 source. At 57th street, inhabitants have reported eight cancer-related deaths. According to the *Foundation Medical Protocol* those individuals are classified in Group - III. When the medical authorities were asked about the correlation between the radiological disaster and the cancer cases, they immediately rejected any connection at all. However, this dissent must be built on the knowledge arising from epidemiological studies done on the population belonging to the Group - III. Are the Goiânia biomedical specialists truly concerned with this group in terms of a research topic, or is the answer just a matter of politics? In the international sphere, the literature shows an increasing concern with late effects of low dose of radiation (Bertell 1985; Children and Radiation Conference 1993. Norway). Thus the Goiânia biomedical investigators would seem to have a unique opportunity to contribute to a contemporary international debate if they established a real dialogue with the population affected by the radiological disaster.

13. 3. Victim Categorization within a Force Field

Based on observations done in early post-disaster contexts three major forces were in confrontation and negotiation in the aftermath of disaster: local government, federal government, and the population affected by the radiation. While negotiating a specific agenda, each one contributed simultaneously to the definition of the affected body: (a) CNEN had to domesticate and to control contaminated spaces and bodies in 'clearly' defining doses and geographical boundaries in order to competently act as a 'decontaminating' agent; (b) the fragile government of Goiás had to promote its interests

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on the national level through a scientific and health care institution; (c) the members of the Victims Association called themselves victims for a number of reasons, among them the compensation for material loss and the establishment of health monitoring programs. As the years pass those forces become more nuanced as changes occur among people and institutions involved in the disaster, as for instance with the establishment of nuclear experts and the reduction of the FUNLEIDE authority. The first, whose power arises from the expertise acquired from the Goiânia radiological disaster, turns into CNEN lending support to victim categorization statements. The second, due to internal conflicts and the Goiás Government' s agenda, converts into a secondary and less effective voice.

Thus, the definition of the population affected by the disaster depends upon particular social actors' understandings of illness, and the definitions also change through time. In this way this study resembles Margaret Lock's (1994) comparative study on disputes in both North America and Japan associated with organ transplant technology. She claims that there is a correlation between organ transplant options and individuals' definitions of death. She pursues her argument by demonstrating that the option for transplant is defined by the cultural construction of the death related to the social and political order. In North America there is actually a remaking of the death with an increasing medicalization of mortality and with individuals' shared idea of making death useful. In contemporary Japan, there are contested attitudes towards new technology, brain death and organ transplants. She argues that this debate is intimally linked to a widespread ambivalence about the process of Japanese modernization. She concludes that the debate is not really about human suffering, however, but it is a manifestation of the struggle by people from a whole range of political persuasions to create a moral order for Japan. In the United States the talk is about commodification of

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human parts and it calls attention to the flow of organs from the poor to the rich, from the third world to the first world.

In the Goiânia case, multiple and controversial categorizations of the population affected by the radiological disaster similarly reveal political struggles over symbolic control of the disaster __ the disaster memory __ more than an actual concern with the well-being of affected individuals. In this way, for one side, people self-identified as "victim" raise their voices bringing disaster memories to the inscription of their current bodies and everyday biomedical experiences. In doing so they fight for a more inclusive project related to their identity as a radiation illness patient and point to a disaster in process. On the other side, the state government and nuclear experts placed the disaster in the past by displaying knowledge, disaster maps and numbers. From this perspective the disaster victims are forever fixed at the physical decontamination phase. Thus, conflict over the categorization of the affected populations gives rise to contested memories of social actors experiencing the aftermath of the disaster.

In this third chapter I describe how the radiation spread, based on Margarida's recollection. I trace the radiation exposure network and highlight the transformation of scrap as material remains to its representation as magical power. I point to issues of poverty, habitation patterns, the living conditions of unskilled workers in an urban setting, friendship, kinship and occupational networks, gender, rural migration and nuclear regulations as the conditions that contribute to individual vulnerability. I investigate the process undertaken by CNEN and the Goiás Government in constituting the official identity of the victim based on a biomedical paradigm of "metric suffering".

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From the understanding that identities are not fixed but result from an interactional process that emerges from engagement with sources of power, I analyze the conflictual relationship established between the victims and the FUNLEIDE. Thus, the victim's identity arises from a field of forces involving the "radioacidentatados", the FUNLEIDE and the *"Associação das Vitimas do Césio-137"*, a grassroots organization. Victimhood results from the process which involves the "radioacidentados'" continual requests for the inclusion of other complaints of distress besides the ones defined by the narrow biomedical definition. This emphasizes the recurrent set of blows and problems resulting from attempted interventions with official discourse, another characteristic of the unfolding events. In the Goânia case, the multiple and controversial categorizations of the population affected by the radiation reveals a political struggle over disaster knowledge, leading to a confrontation between official memory, sustained by institutional power, and subjugated knowledges experienced by the survivors, and held as memories. This is the topic I address in the next chapter.

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FOUR

REMEMBERING AND FORGETTING: THE POLITICS OF MEMORY

" Me and my wife, we are selling "polvilho"[159] and we earn two dollars and ninety-four cents for a tin can sold.[160] We pick, for example, a street and each one of us stay on one side. We knock the door and offer the "polvilho"... People can order the "polvilho"... if there is any interest to order the "polvilho"... They know that I am a "cesium victim". Some are afraid of me but others are not. Usually they ask me... always they ask questions like an old man once I talked to... He liked me very much because I told him part of the disaster story. But, sometimes... There were people who wanted to know if this is a contagious disease. They were concerned if this could be caught or not. Once, I was sitting close to a young woman when I said: I am a Cesium victim. She immediately wanted to get up.

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159 "Polvilho" is a powder made of manioc root and it is a major ingredient in regional cakes recipes, as "biscoito de queijo" (Cheese Cookie) and "pão de queijo" (Cheese Bread). At the supermarket, one finds industrial and home made "polvilho". Nevertheless, the latter remains as the most appreciated by local people. At Goiânia suburbs, some individuals prefer to buy it at home than go to the supermarket. This cultural preference promotes informal sector activity as the occupation undertaken by João.

160 Tin can is the local standard measurement for selling "polvilho". It is the equivalent of eighteen liters.

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We go together to the same street. My ordering pad... The orders have all the same number: 137. I always write the same number.

Actually, I think I have here a whole pad with the 137 on it. All my

pads, always... I will show you... The number __ 137 __ come first. I write the number first in all my ordering pads. (He picked up a pad and showed me) *You see, here is the customer's address. But all the orders have the same number: 137. If I have, let's say, five orders each day, all will have the same number: 137. I use this number in everything I do. Almost everything. My house, here, has this number written everywhere... Spread all over.... It is not the official address number... No.... But there is this 137 written all over... On my bedroom wall. You know? Because this is one thing that I like people to see, what life is about... because this* (the disaster) *I never forgot. I will never forget. Each time I look at* (the written number) *I remember, always ... I remember what happened to us. And essentially that is my life."*

(João. September 1996)

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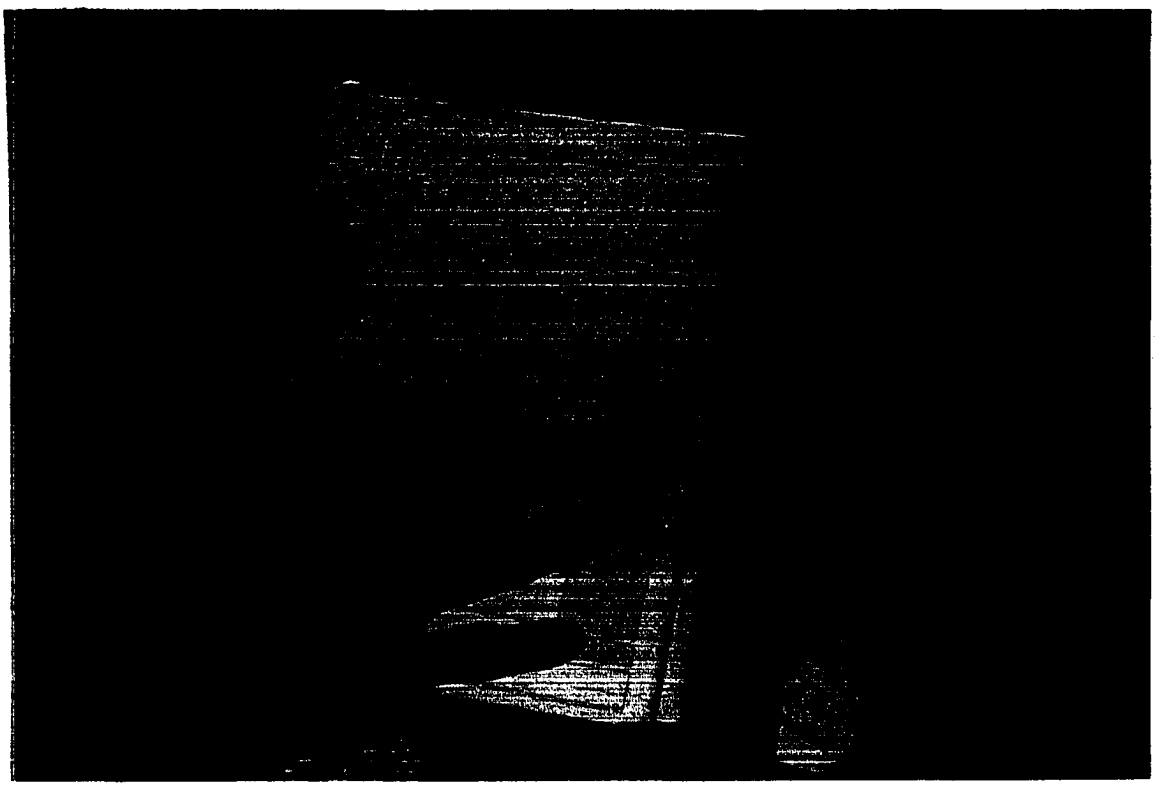


Plate 08.
João shows his ordering pad with the number 137 written on the top right corner of the page.
(From Telma Camargo da Silva 1996)

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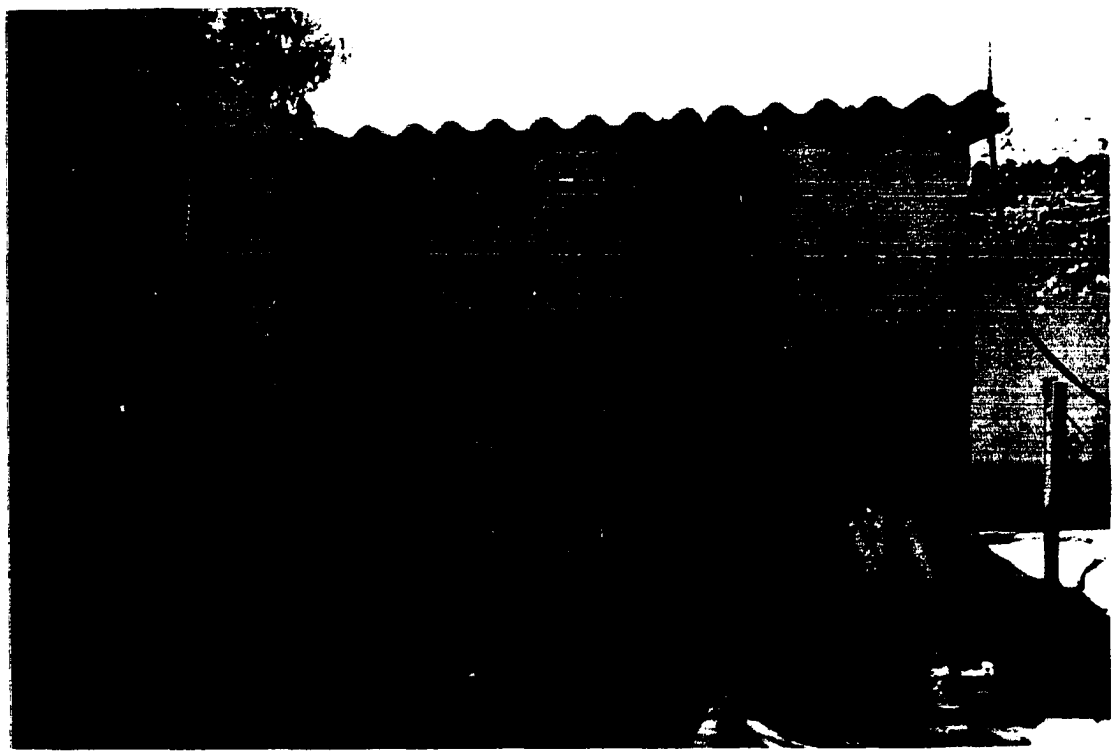


Plate 09.
João numbered the room localized at his house's backyard as it officially has the number 137.
(From Telma Camargo da Silva 1996)

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Plate 10.
João wrote the number 137 at the bottom of the column of his house water box reservoir.
(From Telma Camargo da Silva 1996)

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João was the one who helped M.G.Fe. to transport the cesium 137 source capsule to the Public Hygiene Control Unit. In 1987, he carried it on his shoulder. In 1996, he carries it as a capsule memory, as a number he writes any place, any time, as a way to keep alive what he went through. But mostly, he bears with his single presence the testimony of the Goiânia Radiological Disaster, a remembrance which is incorporated and inscribed in his body. As a disaster survivor his presence evokes many and contradictory emotions such as doubt, curiosity, fear, solidarity, stigma... Multiple feelings parallel multiple memories engendered by those years and by those living and working in Goiânia in 1987. For them, the meaning of the present is each moment constituted by the past, and life's continuity is established by the experience with the radiation fallout. The disaster aftermath is a permanent and dialectical motion of remembering and forgetting events, pains, decisions, images, memories which tangle with some individuals' contemporary social suffering (Kleinman at. al. 1997).

In the case of catastrophic events, the process of remembering points to a complex of responsibility, financial compensation and health care monitoring programs. The production of disaster knowledge arises as a confrontation between official memory, sustained by the institutional power's (i.e., government and nuclear experts) representation, and subjugated knowledges (Foucault 1980 [1972]:82) experienced by survivors' memories. The limits of a disaster memory __ i.e., what to leave out and how to recall __ blows up in conflicting power interests that shape controversial reminiscences, and increases the social suffering of those already impacted by the disaster. CNEN's postulate of *"everything is under control"*; *"disasters happen but the radioactivity can be controlled"* mingle with survivors' bodily memories (Connerton 1996). The first encases disaster's remembrances in frozen experiences, feelings and classifications. This perspective points to an event located in the past, and brought to the

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present through unchanging official numbers, maps and sites. The second, points to prevailing experiences that actualize the 1987 events and engender the locus of memories.[161]

14. SYMBOLIC DECONTAMINATION OF DISASTER: PURIFICATION THROUGH FORCED FORGETTING

> *"In vain, great-hearted Kublai, shall I attempt to describe Zaira, city of high bastions. I could tell you how many steps make up the streets rising like stairways, and the degree of the arcades' curves, and what kind of zinc scales cover the roofs; but I already know this would be the same as telling you nothing. The city does not consist of this, but of relationships between the measurements of its space and the events of its past: the height of a lamppost and the distance from the ground of a hanged usurpers' swaying feet; the line strung from the lamppost to the railing opposite and the festoons that decorate the course of the queen's nuptial procession; the height of that railing and the leap of the adulterer who climbed over it as the dawn;* (...)
> *As this wave from memories flows in, the city soaks it up like a sponge and expands. A description of Zaira as it is today should contain all Zaira's past. The city, however, does not tell its past, but contains it like the lines of a hand, written in the corners of the streets, the gratings of the windows, the banisters of the steps, the antennae of the lightning rods, the poles of the flags, every segment marked in turn with scratches, identifications, scrolls."*
> (Calvino 1974: 10-11)

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161 *"Memory and history, far from being synonymous, appear now to be in fundamental opposition. Memory is life, borne by living societies founded in its name. It remains in permanent evolution, open to the dialectic of remembering and forgetting, unconscious of its successive deformations, vulnerable to manipulation and appropriation, susceptible to being long dormant and periodically revived. History, on the other hand, is the reconstruction, always problematic and incomplete, of what is no longer. Memory is a perpetually actual phenomenon, a bond tying us to the eternal present; history is a representation of the past."* (Nora 1989:8)

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The Goiás state capital was transferred from the town of Goiás[162] to Goiânia, a city planned and built during the thirties to be the new capital. The head of Government at that time, Pedro Ludovico Teixeira __ a physician __ used a sanitary argument[163] to get support for his endeavor (Campos 1980, 1996, 1999; Freitas 1999). Therefore, the city of Goiânia arises from the association of medical knowledge, employed as a power strategy, associated with urban planning: an ideal city conceptualized as a privileged locus of health (Freitas 1999: 240).[164]

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162 The city of Goiás, knew as "Goiás Velho" ("Old Goiás") is located at135 km from Goiânia. In 2001, the United Nations Educational, Scientific and Cultural Organization (UNESCO) conferred to the city the title of Cultural Patrimony of the Humanity.

163 *"The relocation of Goiás state capital, in 1933, is related to the "establishment" of Hygiene Superintendence and the "1931 Regulation". Making use of medical knowledge, Pedro Ludovico __federal designated governor__ delegitimazed the old capital, Goyaz town, in affirming its inadequacy for housing government headquarters. 1931 Regulation furnishes the major arguments against the city of Goyaz, which I name "sanitary arguments". At the same time, based upon medical knowledge, expressed at the "1931 Regulation", the new capital, Goiânia, is built (Campos 1980:29-39).*" (Campos 1996:180)

See also Campos 1999:232-233.

(My translation of original text written in Portuguese)

164 *"The construction of Goiânia, in the thirties, was preceded by a number of debates which emphasized the insalubrity and the lack of urban infrastructure at the city of Goiás. Those were major argument on behalf of capital relocation.*

(...) When federal designated governor, Pedro Ludovico Teixeira __ a physician __ decided to build a modern city, he wanted the new capital to privilege inhabitants health through adequate public services, following ideal parameters for hygiene and comfort: water supplying, sewerage system, domestic waste collection, and urban built environment regulation. Besides arborizated streets and avenues, the city would have public parks, gardens and areas designated for sports and leisure.

To plan this ideal city - privileged locus of health - Atílio Correia Lima a renown urbanist-engineer, Sorbonne graduated, was hired. (...) Following the instruction he received, Correia Lima emphasized sanitary-hygienic aspects and

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Goiânia did not accomplish the ideal of offering to its inhabitants the healthy idealized environment as stated in the original plan (Freitas 1999: 271-273; 283)[165]. Nevertheless the ideology of a clean environment remains and surfaces from time to time mostly in individual's commentaries about the city's arborization. The 1987 radiological disaster ruined this ideal. To confront the radiological emergency and to validate Goiânia as a locus of health, the 1930's alliance between government power and medical knowledge is revitalized nowadays with different social actors and aims. Despite the difficult relationship established between the Goiás state Government and CNEN at the initial phase of the disaster, the 1990's nuclear experts[166] replaced 1930's urbanists as major partners in this alliance. Along with the control over the spread of radiation, the mathematical assessment of the radiation and the decontamination efforts, the new alliance undertook another decontamination process: one of symbolic cleansing. The 1930's "sanitary argument" was replaced by a "sanitary process" with two aims: (a) to domesticate the radiation damage and risk; (b) to struggle for the re-establishment of

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delivered emphatic instructions regarding works and required care in order to provide the new capital with ideal conditions for physical and mental health." (Freitas 1999:239-240)
(My translation of original text written in Portuguese)

165 Contradiction regarding project and reality in the case of brazilian's planning cities was already raised by Holston (1989) in his examination of Brasília, Brazil's capital.

166 Although the fact that Goiás state government and CNEN established conflicted relationship at the emergence phase of the disaster, they both had interest in keeping the idea of a disaster localized in a precisely moment in the past: 1987. The first to assure the commercialization of goods from Goiás. The second to promote Brazilian Nuclear expertise (that is the decontamination of radiation contaminated places and individuals in a context of disaster radiation disaster) at international communities.

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Goiânia as a healthy and clean city. To achieve this endeavor, the alliance of government and nuclear experts fought for the control of the disaster memory.

From this perspective, purification of the dirty city included re-framing the pollution[167] by way of several interconnected measures: classifying and mapping the individuals and the places contaminated following immutable categories; demarcation and management of what and how to remember the disaster experience. Thus the new alliance took control of the radiation contamination at the same time as it made efforts to transform the disaster from disorder into an ordered event from both functional and symbolic perspectives. To support this process various actions were undertaken during ten years (1987-1997) to contain the disaster: by enlisting certain individuals; by veiling affected population claims; by mapping the places, and by modifying the built environment[168] in order to wipe out the marks of the disaster; by teaching the population the benefits of radiation use, and by the CNEN proclamation concerning the safety of nuclear technology. The control of the disaster thus involved the forced forgetting of its visible traces and its harmful consequences, which is what I turn to now.

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167 *"Hygiene, by contrast, turns out to be an excellent route, so long as we can follow it with some self-knowledge. As we know it, dirt is essentially disorder. There is no such thing as absolute dirt: it exists in the eye of the beholder. If we shun dirt, it is not because of craven fear, still less dread or holy terror. Nor do our ideas about disease account for the range of our behavior in cleaning or avoiding dirt. Dirt offends against order. Eliminating it is not a negative movement, but a positive effort to organize the environment."* (Douglas 1980 [1966]: 2)

168 Built environment is the integration of the production of space and spatial configurations as an active element of the historical geography of class struggle and capital accumulation. (Harvey. 1989:4) For instance, houses, streets, bridges, water works, schools, hospital, maps of an urban environment is geared toward capitalist production and exchange and is a locus of class conflict.

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14.1. FUNLEIDE as a "radiation container"

Confronting the newcomers of claimed radiation-related distress __ the "cesium-policemen" __ the government and nuclear experts made use of biomedical knowledge to limit the affected population to the 1987 numbers: 249 contaminated individuals. Official memory also represses the deaths caused by the disaster limiting it to those which occurred in 1987, that is, four causalities. In this way, when D.A.Fe., the scrap dealer who opened the teletherapy unit, and one of the most contaminated individuals, died on May 1994, the official medical report said his death was caused by cirrhosis. In the same month in 1994, two women, C.C.Fr. and M. das G.V., both classified as disaster victims according to FUNLEIDE categorization, also died. M. das G.V. suffered from breast cancer in 1991 and later, in 1993, she had a brain cancer. Like D.A.Fe., their deaths were not considered to be related to radiation. ("Morre de Câncer mais uma Vítima do Césio 137". Newspaper *O Popular*, May 1994; "Morre Outra Vítima do Césio, 3ª este Mês". Newspaper *O Popular*, May 1994).

The official report of D.A.Fe.'s death has been openly contested by Colonel Vasco Martins Cardoso, a physician and former Director of the Health Department at Police Military Hospital[169]:

> *"The necropsy of Mr.D. revealed cancer of the esophagus, of the prostate, marrow at early stage of leukaemia and anomalies at the liver. D. didn't die of cirrhosis as published by the media. I did the autopsy. He did die of hepthopaty caused by alcohol abuse but the mutations found can only be caused by the radiation."*
> (Assembléia Legislativa 1997:56)

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169 He worked during the emergency phase of the disaster making hematological evaluations of the victims.

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To de-legitimize this allegation, the board of FUNLEIDE claims its physicians as the only ones in Goiânia to have the scientific knowledge to make pronouncements about "radioacidentados" health conditions. To control the memory of the disaster, FUNLEIDE uses disaster victims as a controled source of data. The impacted individuals labeled as official victim, identified as radiation patients, and categorized within the FUNLEIDE Groups, turn into biomedical bodies under FUNLEIDE charge. The institution regulates the "radioacidentados" bodies as a way of dominating scientific investigation and eliminating those researchers who do not share FUNLEIDE's point of view[170]. The process of data control closes the institution's doors even for those who have worked there. A psychologist, former FUNLEIDE's employee, chose the institution as the subject of his Masters thesis and told me the pressure he went through:

> "*When it was three months before the end... When I was almost finishing my thesis, the new director... Member of the administration board, __ this man called I. __ he made everything he could to avoid my access to the Foundation. He even kept asking the people:*
> *__ Who is this young man? Who is this strange guy? I don't want any stranger at the Foundation.*

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170 In 1966, when doing my fieldwork research, I introduced myself to the FUNLEIDE president and I asked him the permission to approach the "radioacidentados" under health care monitoring program at the institution. He refused my request with the assertion that the patients didn't want to be "disturb" by any researcher anymore and he didn't have their permissions to deliver theirs directions. Nevertheless, resuming previous contact I had with some of those individuals I was welcome in theirs homes what contradicted the president affirmation.

When collecting data at the Foundation reading room I was closely observed and not allowed to stay alone. After a while, I felt the pressure and decided not to attend the Foundation at a daily base as I had planned. Thus, I chose to interview some of the FUNLEIDE professionals at their private offices. My relationship with the FUNLEIDE board of directors deteriorated when I participated at a TV Talk show (*Jacques Sobretudo.* Multicanal. September 10, 1997), and I criticized the institution for not be delivering the health care service as stated in its initial project.

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> *He didn't know the work I developed there for almost five years. At that time, I was already concerned with the seriousness of the work I was doing there and the evaluation of it. And then this guy came.... What I am telling you, I know that is not a scientific attitude. It is just an opening of my heart."*
> (S.B. da C. N. June 1996)

At the same time, for an institution whose participants do not have a tradition in research nor the academic background required by funding agencies, the appropriation of "radioacidentados" bodies is the guarantee of scientific cooperation. A member of the FUNLEIDE scientific team, talking about the 1996 President's insensitivity to research, illustrates also the use of "victims bodies" as a value to be manipulated when negotiating exchange cooperation programs:

> *"This one* (FUNLEIDE's president) *is much more bureaucratic. What happened in those last six years at the Foundation? Nothing. Do you understand? I am talking about research projects... Nothing. The contact we had with Japan... No one went there anymore. Three years passed after the last person went there. Because you know, I was crazy to get people to go there. I kept saying that Japan is a beautiful country. I even said:*
> *___ Look! You will eat that... And that. The Japanese food is good!*
> (laughs)
> *But I couldn't get people to go. And regarding Canada it is the same. It is over. The boys there don't want to collect blood samples anymore, so how to keep the research going? Ah! There was a nurse that I sent to Holland. She worked here, and I talked to N. __ this investigator from Holland. I said to him:*
> *__ Look! I already gave you a lot of blood, so do me a favor: you will accept this nurse in Holland. After that talk, he managed to have her there and she went."*
> (M.P.C. June, 1996)

The rapport between the administration board and the health care team

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was marked by tensions and criticism, as suggested by the above comments. Nevertheless, most of those tensions did not surface in public. The unending disagreements among different spheres of workers and between those and the institutional patients were constrained by the Goiás Government's command. As stated above the FUNLEIDE President is designated by the Governor to achieve a political agenda whose major endeavors have been the accommodation of any new disaster consequences and the struggle to keep it in the past. According to Fustier (1991) the institution works as a *"container for any cesium-137 related problem, in saving the Goiânia social context from any "contamination" and working as a "radiation container"."* (In: Neto 1994:53) [171] While suppressing from the public the victims' contemporary health conditions and their current suffering, the institution sanitized the contaminated city by making use of the strategy of forced forgetting. Additionally, the ongoing process of delegitimising new victims, the control of patients by FUNLEIDE as biomedical bodies, and the harassment of independent investigators expanded their role as "radiation container". (Fustier 1991) The institution performs the role of a container because it acts to manage the memory of the disaster and to enclose it in order to free Goiânia from pollution and to restore to the city its idealized health condition.

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171 " (...) *in radiological protection, a radiation container is an armor plating structure or a device which aim is to reduce or to prevent the passage of particle or radiation from a portion of space to another one (Tauhata and Almeida. 1984) Based on that definition, it is possible to make a correlation between the real conditions of an accident that asked for the use of containers for the isolation of radiation contaminated material, and the imaginary of the institution established for a social function.*

According to Fustier (1991), FUNLEIDE had various armor plating artifices, which the major one was the control of the information regarding the "radioacidentados" conflicts and dissatisfactions concerning the health organizations... " (Neto. 1994:53-54).
(My translation of original text written in Portuguese).

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14. 2. Official appropriation of the built environment

During the first years following the acknowledgement of the disaster, Goiânia public spaces were employed as a locus for the population's expression of their feelings regarding the impact they had suffered. Individual's contradictory uses of the cesium-137 marks suggest that the remembrances have not yet been subjugated by official knowledge. In 1988, the digit 7 of the number 57 (as in the use of the 57th Street)[172] was wiped out from the street's official demarcation. As one of the most contaminated spots, this street and its inhabitants were considered to be polluters and underwent a process of stigmatization.[173] This urban interference demonstrates the hope of a 57th Street resident of purifying his environment by eradicating the former street name from the municipality map.

In other areas of the city, individuals wrote on building walls the name of the radioactive element that summed up the whole disaster: *Césio-137.* During the 1988 municipal campaign, the slogan *Vote Césio-137* (Vote for Cesium-137) surfaced on urban space again. What were the meanings of these inscriptions: a campaign for nullifying votes? A metaphor used to nominate the candidates from all the political parties, classifying them as malignant[174] as the radiation? According to the Colonel of

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172 At the 57 Street was localized the house where R.A. punctured source capsule in transforming the place in one of the radiation hottest spot. (See chapter III)

173 The 57 Street houses suffered from devalorization; scared from radiation many individuals moved away and they hardly find someone who wants to rent them a house; at the same time, this street showed a sequence of empty houses displaying a writing placard: *"Aluga-se"* (For rent).

174 The continual blame of corruption made by the media and the left ring parties against the politicians (from the right ring parties) provoke on the population the distrust on politicians' work. For that reason, many social groups consider the politicians' acts harmful to the well being of the citizens and to manifest their feelings, they employ

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the First Hour[175], in an interview he gave me, the writings were a campaign orchestrated by Governor Santillo's political enemies to associate the Governor's administration with the disaster and thus eliminate the votes his allies might have gained. The candidates[176] of the *Partido dos Trabalhadores* - PT (Workers' Party) and the *Partido Comunista do Brasil* - P.C. Do B. (Communist Party of the Brazil) understood the graffiti as the expression of citizens' disappointment with the politicians and a claim for the null vote, which they did not support. ("Passeatas Agitam a Cidade". Newspaper *Diário da Manhã*. November, 12 1988).[177]

As the years went by, the inhabitants' visual inscription on urban places was reduced. At the same time, official purification of the disaster sites was intensified by the way of re-ordering the built environment. Emblematic of this undertaking was the

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metaphoric images which mingle the notions of damage and politicians, as in the use of the expression "césio -137" during the municipal campaign.

According to the Constitution of the Federal Republic of Brazil, the vote is an obligation of all Brazilian over 18 years of age and, an option for those over 16 years of age and under 18. I presume that this obligation increases on the individuals this skepticism against the politicians.

175 See Chapter II for his role at the disaster emergency phase.
He worked close to Henrique Santillo, Goiás State Governor from 1987 to 1990. In an interview I made with the former governor, he declared that his administration was severely damaged not only in economic aspects but mostly in political sphere. (See also: "Tragédia e Pânico na Vida de Goiás". In: Césio: 10 Anos Depois. Newspaper *O Popular*. September, 28 1997)

176 The candidates were: Pedro Wilson Guimarães (PT) and Aldo Arantes (P.C. Do B.)

177 Vincent Crapanzano designates this process of recollection as *the rhetorization of the "remembered" past.*

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construction of the *Centro de Cultura e Convenções*[178], at the site where the ruins of the Instituto Goiano de Radioterapia[179] remained. The new building with theaters, conference and show rooms, replaced the devastated area that, since 1987, the population had labeled as the *Buraco do Césio* (Cesium Pit). A portion of Goiânia inhabitants asked for placing disaster remembrances to the convention building project, whose aim was the revitalization of this section of Goiânia:

> *"(...) the speculations over the construction of the "Centro de Cultura e Convenções" acquires each day large support. Goiás Government along with business persons from different trade sectors __ and not just those from the hotelier branch __ have already decided that the edifice will be at the corner of Avenues Paraíba and Tocantins, where previously was located Santa Casa de Misericórdia.*
> *The building will represent a landmark of the city development. (...) But it is impossible to forget that it was in this site that started the suffering caused by the breaking down of Cesium-137 capsule (...)*
> *(...) Since the Government will build a modern convention center, it urges to raise at its entrance hall. It should be impressed a monument to the victims of this distress on it, not just for us from Goiás, but for all the Brazilian people a page from our history. This is necessary because we easily forget our heros and our martyrs."*
> (Paulo Linhares. "Opinion"- reader section of the Newspaper *O Popular*. August 2, 1992)

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178 The project was developed at the administration of Iris Rezende Machado in his second mandate as Goiás State Governor. During his first govern (1983 to 1986), the plot where was built the *Centro de Cultura e Convenções* was purchased by IPASGO, (Goiás state servants'' health institution) from Santa Casa de Misericórdia (a non-profit health Institution). At that time, the governor made public acknowledgment of his design in constructing the state servants general hospital in this locale. His promised was never accomplished.

179 The cesium-137 abandoned unit was collected from this dilapidated building that was the Institute former premise.

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The inauguration of the *Centro de Cultura e Convenções* took place on March 28, 1994 but the building does not carry any allusion to the cesium tragedy. While the convention center got political support and the required funds for its construction, the 1993´ Disaster Memorial project (*Memorial ao Acidente Radiológico de Goiânia - Césio 137*)[180] which would house the Museum of the Disaster, remains on paper. This represented the political orientation of the Government at that time that is to promote cleanup of the vestiges of the disaster contributing to the symbolic purification of the Goiânia environment. According to José de Júlio Rozental[181], the first to think of

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180 The 1993´ architectural project, under the responsibility of Maria das Graças S. Japiassu, was developed based on an idea presented by nuclear physicist José de Júlio Rozental when responsible for CNEN office at Goiânia. At the same year, the Goiânia Secretary for Environment, biologist Osmar Pires Martins Junior, incorporated it at his secretary program. While he obtained the support of Goiânia representatives and consequently money allocation for other projects as the preservation of *Vaca Brava* area and the establishment of the *Botafogo* Park (1996), the Disaster Memorial Project was never included in the budged of the city administration.

181 After the acknowledgment of the radiation spread, Goiás Secretary of Health contacted CNEN headquarters at Rio de Janeiro, on September 29, 1987. José de Júlio Rozental, Director of the *Departamento de Instalações e Materiais Nucleares* (Department of Nuclear Installations) - DIN (CNEN) was the first to arrive at Goiânia, at the dawn of the September 30. He was the general coordinator of the emergency phase of the disaster until mid November, when CNEN president, Rex Nazaré, assumed the coordination, after several requests made by state governor in urging his presence.

As DIN Director, Rozental was in charge of the CNEN section responsible for controlling, inventorying and inspecting any nuclear related activity. For that reason, charges were brought against him related to the disaster causation and he was included in a Federal Police Court of Inquiry (N° 157/SR/DPF/GO. October 10, 1987). He was not judged guilty. Regarding culpability, he considers that besides the owners of the *Instituto Goiano de Radiologia,* the State must recognize its part on the disaster causation and undertake the victims' financial compensation. (Interview on October 31, 1997)

With the creation, in 1991, of the CNEN District at Goiânia, which aim was the construction of the permanent radioactive waste repository, Rozental returned to the city. He stayed as the District Supervisor from March 1991 to July 1993 when he asked for retirement and moved to Israel.

Diversely from many of his nuclear experts colleagues and from the

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the Memorial idea, many Goiás politicians do not want to associate Goiânia with the disaster or to recall that the city houses a radiation waste repository. He insists that the politicians want to highlight the beautiful aspects of the city, and consequently to erase the disaster from Goiânia history. This viewpoint, in his opinion, sustains their disinterest regarding the 57th Street Memorial Project.[182]

Beauty, health, trees and flowers. The ideals that sustained the Goiânia founding project during the thirties, surfaced again in 90's sanitary process with the emphasis the governmental administration put on the association of nature and the built environment. Influenced by European and North American experiences of "garden cities"[183], the 1933 Goiânia urbanist project emphasized the idea of integrating

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CNEN dominant point of view, he thinks that the Goiânia disaster cannot be erased. He argues that the lessons from Goiânia and Chernobyl accidents are not yet completely discussed neither learned. He argues that, as a scientist, his perspective about the disaster remembrances is different from that of a politician person. He declares that he considers the educational aspect of the disaster and for that reason it needs to be remembered.

(- "Cidade Enfim Livre do Césio". Newspaper *O Popular*. December 20, 1987;
- "Acidente Radiológico, Duas lágrimas... E Lições." In: Césio: 10 Anos Depois. Newspaper *O Popular*. September, 28 1997;
- Interview on October 31, 1997)

182 Rozental expressed those opinions at an interview he gave to me on October, 27 1997.

183 Pedro Ludovico Teixeira, Goiás State Governor, invited the urbanist Armando de Godoy to analyze the site where the new capital will be constructed. In his report from April 24, 1933, Godoy mentioned Lectchworth, in Great Britain, as a model of planned city and a prototype of garden city, demonstrating the paradigm to follow in the Goiânia project.

Later on, Godoy influenced by "Redburn", a garden city located at New York suburb, gave the guidelines for planing the Setor Sul, a section of the new city. (Alvares 1942:32)

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individuals, nature and the modern city. In this direction, the original project expressed the concern the urbanists had with the conservation of rivers and woodland[184] situated in the new urbanized area. The 1980/1990 governmental reappropriation of nature as an important element of urban well- being left behind any attention to the quality of river water, city sewage system, or native woodland and instead promoted the cultivation of flowers as an expression of concern for nature. In this way, in 1989, the city mayor, Nion Albernaz, launched the project of growing flowers all over the plazas situated in upper class neighborhoods and in downtown Goiânia. The beautiful and colored flowers were supposed to contribute to purifying the city still suffering under the impact of radiation contamination.

The emphasis the municipal administration put on the recuperation of parks and on the cultivation of flowers signified an effort to forget the areas that suffered from radiation contamination. In fact, while some parts of the city were covered with flowers and attracted tourists, the former contaminated sites remained as abandoned, empty spaces. Despite this limitation, the stress municipal administration has put, since 1989, on nature conservation, reverberates at the national level. Thus, in late 1995, during the Third Global Meeting of Urban Ecology, held at Campinas, in São Paulo state, the *Sociedade Brasileira para Valorização do Meio Ambiente* (Brazilian Society for Environmental Valorization) - BIOSFERA -, an NGO from Rio de Janeiro, rewarded the city with the title: *Cidade Modelo Ambiental* (Environmental Model City).

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184 For instance, the original plan indicated the parks of *Bandeirantes*, *Burity*s, *Botafogo* and *Capim Puba* ; and Park-Avenue from Jaó dam to Goiânia downtown, with Yatch Club and Botanic garden.

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This award raised a controversy among environmental sectors in Goiânia. Some individuals questioned[185] the appropriateness of this title to a city where there are no public policies regarding a sewage system; the administration of water resources; the treatment of solid and liquid waste from domestic and industrial use; and a selective garbage collection. Nevertheless, the title remained and the municipal government and business sectors transformed it into a token for the establishment of the city's new identity. Financed by the government, the slogan *Goiânia - World Environmental Model* (Goiânia: Modelo Ambiental para o Mundo) sprang out all over the city. Funded by SEBRAE __ *Serviço de Apoio às Micro e Pequenas Empresas de Goiás* (Agency to Support the Micro and Small Enterprises) __ a city guide, written in English, was published with the title: *Goiânia the Ecological Capital.* This strategy of imprinting a new attribute to the city is another element of the sanitary process. The pronouncement of Goiânia's renewed identity achieved a double goal. First, it restored to the city the ideal proposed by the original planning of the thirties, as a place of health with the integration of flowers and trees in individuals lives. Second, it promoted the forced forgetting of some reinforced concrete spots that are not appropriate for living or gardening, and which a recall the city's illness.

As with the erasing of other disaster marks, the radioactive waste repository is also removed from the Goiânia map. In 1995, the former Goiânia District

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185 Some individuals suspected the liability of the agency responsible for the grant. (Newspaper *O Popular.* January 6, 1997) Others, like the councilman Paulo de Souza Neto, President of the Environmental Commission of the Goiânia Common Council, questioned the fact of Goiânia being considered as "an Ecological Correct City". One of his arguments was based on the fact that "About 98% of the sewage originated from Goiânia are released *in natura* into the city rivers and streams". (Newspaper *Folha de São Paulo.* December 26, 1996) This caused the proliferation of the *Aedes Aegypti,* the mosquito responsible for the *dengue*, a chronic disease at the region.

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of Abadia de Goiás, where the repository is located, became an independent municipality. This political strategy, while not removing the radiation waste from its original site (that is Abadia de Goiás) removed a sign of disability from the Goiânia urban map. As part of the sanitary process, the emancipation of the District of Abadia reinforced the re-creation of Goiânia as a healthy imagined community.[186]

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186 Benedict Anderson (1983) linked the rise of the nation-state to the growth of capitalism, particularly as it is manifested in communication, such as print, which, when properly manipulated by the powerful, can give rise to a sense of linkage between groups of people that previously had nothing in common.

I used Anderson's term, to refer to the government and business sectors political actions to fabricate the idealization of "Goiânia as a locus of health," an attempt to bond people from different socio-cultural groups without considering the distinctive needs they have.

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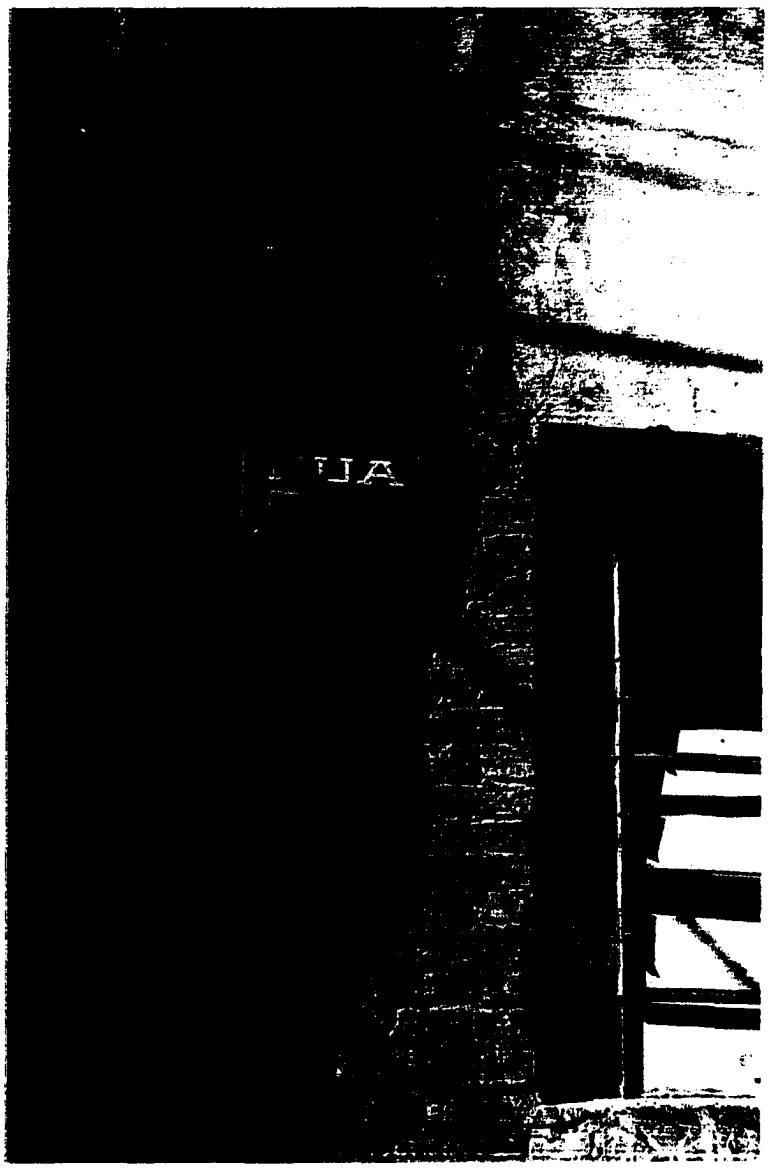


Plate 11.
Individual's interference on the 57th Street signalization.
(From Telma Camargo da Silva 1988)

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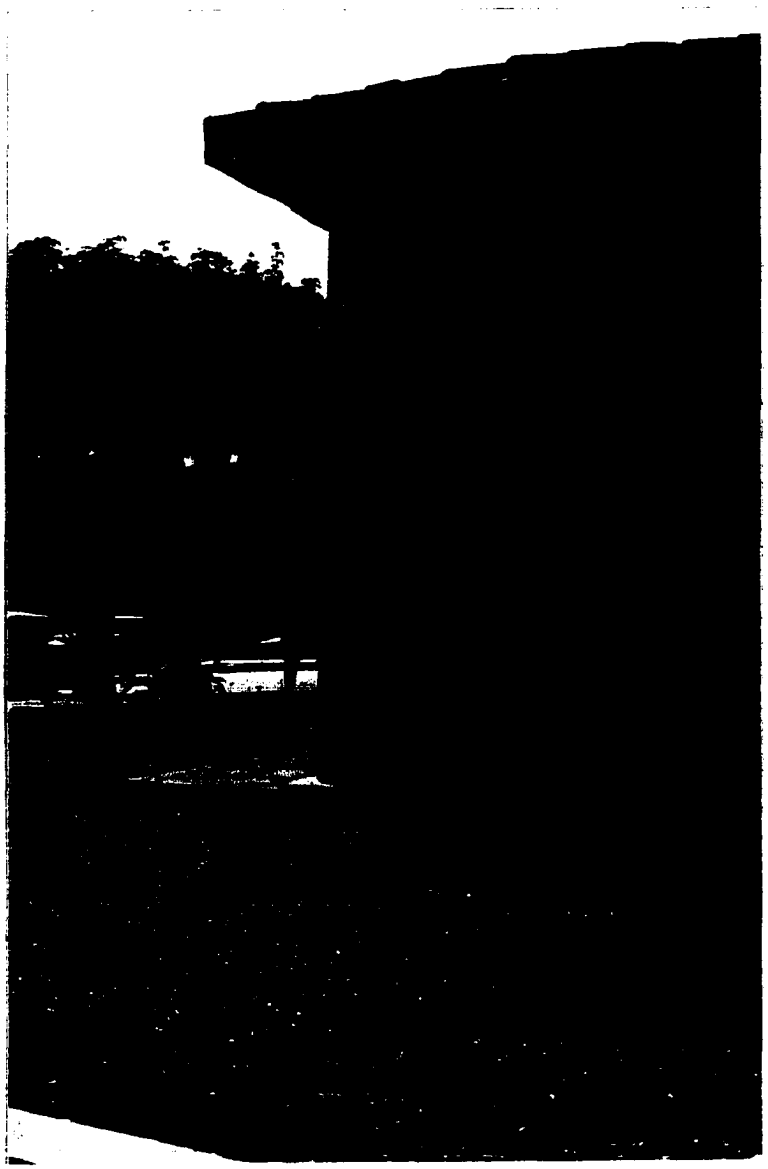


Plate 12.
Graffiti at Goiânia 1988 municipal campaign.
(From Telma Camargo da Silva 1988)

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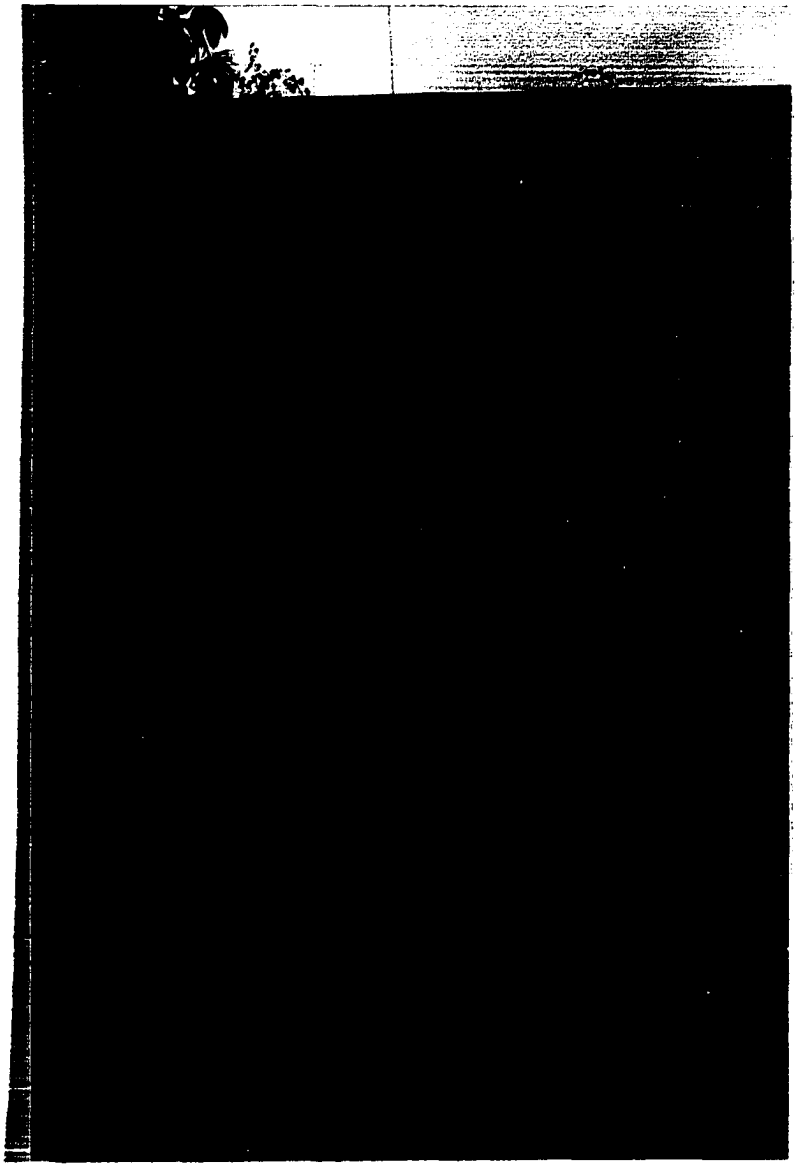


Plate 13.
Graffiti at Goiânia 1988 municipal campaign.
(From Telma Camargo da Silva 1988)

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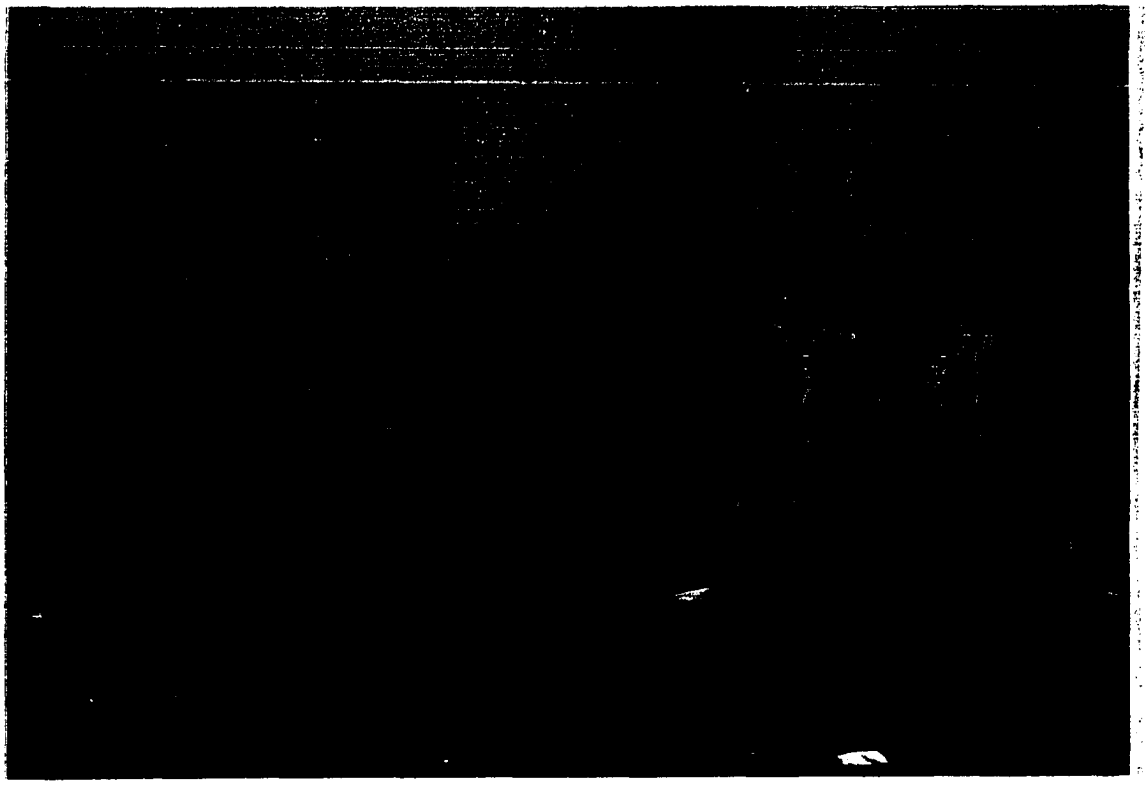


Plate 14.
Graffiti at Goiânia 1988 municipal campaign.
(From Telma Camargo da Silva 1988)

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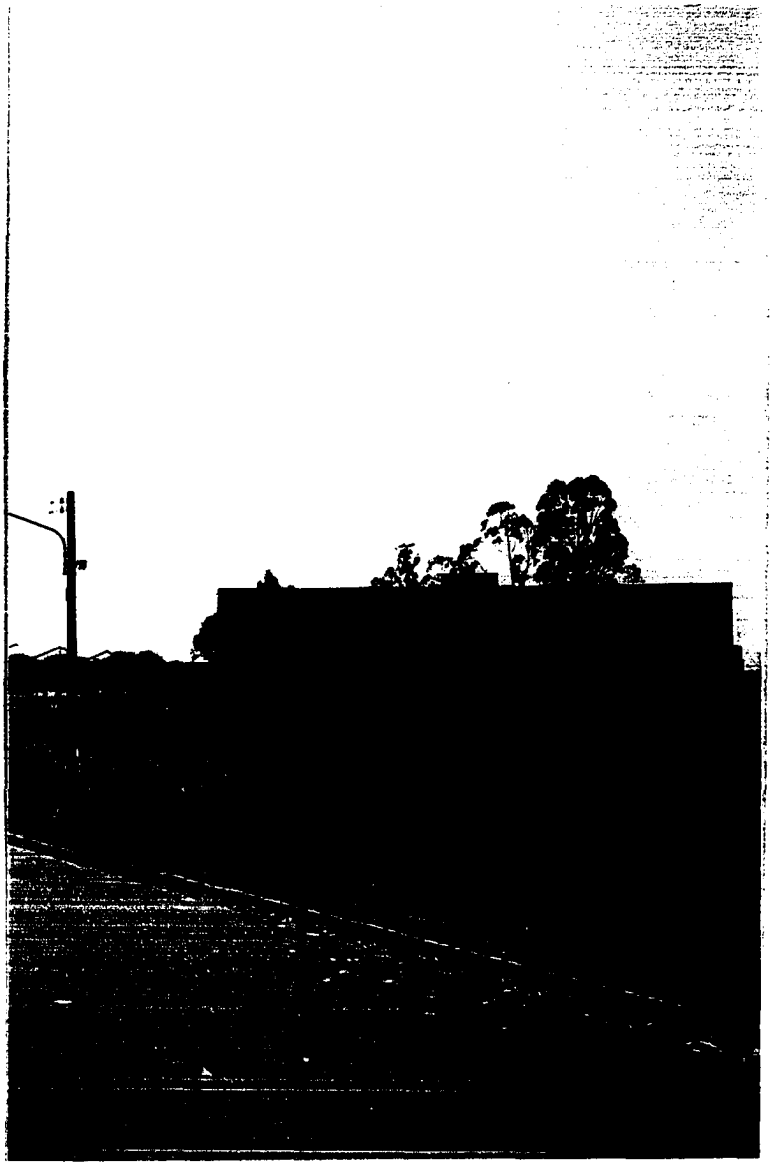


Plate 15.
Goiânia - World Environmental Model slogan printed on Government paid out-door.
(From Telma Camargo da Silva 1996)

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14. 3. Domesticating the Disaster: the Forced Forgetting of the Harmful

While Goiás political and business sectors acted to overshadow the disaster from the city's image, CNEN was committed to cleaning up the meanings of radiation. In 1991, the institution set up the "Goiânia Project" (Tranjan and Rabelo 1997), with the purpose of changing Goiânia inhabitants' perception of radiation risks and nuclear related issues. With a governmental resolution[187], taken on March 1991, that the Permanent Radioactive Waste Repository would be constructed in the same area as the temporary one[188], the nuclear experts initiated actions to avoid demonstrations. Fearing the harmful consequences, people were afraid of the waste repository and were concerned by the idea of living in the proximity of a material which would remain active for three hundred years.[189] Thus, the CNEN project was not only a response to the

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187 On march 1991, based on CNEN nuclear experts studies, Iris Rezende Machado, in his second mandate as Goiás Governor (1991-1994), chooses among three areas suggested, the one that will house the Permanent Radioactive Waste Repository.

Although CNEN presented a list of three candidates sites, there has been an orientation towards the selection of the area where was already located the Temporary Repository:

"Three candidates' sites were selected following "in loco" examination of the potential areas. Studies employed a methodology covering aspects of geology, land and property use, aquifer depths, soil characteristics, and transportation requirements. The three candidates' sites are 400 meters, 74 kilometers, and 100 kilometers away from the temporary storage site.

The three candidates' sites were presented to the government of the state of Goiás for the final site selection. It was expected that the nearest site might be selected to minimize the probability of an accident during the transport of heavy and large volumes of radioactive wastes. Governmental authorities in Goiás considered the sites in the context of this important transportation factor, as well as civic growth trends for Goiânia." (Paschoa at al. 1993: 30)

188 That is at 20 km from downtown Goiânia.

189 *"The Goiânia wastes now stored at the site in Abadia de Goiás have been categorized into five groups. (See table) The volume and average concentrations of each group were determined based on information derived from the way the wastes were*

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impact of the disaster itself, but also a planned action to gain support for the repository construction. In effect, the project was designed to "clean up" radiation by stressing the uses and benefits of nuclear energy.

The first point addressed by the project was the creation of reliance of people on the institution responsible for the repository construction and for the safeguarding of radiation waste[190]. Two interconnected actions were considered by the

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packaged, and assuming an aerage specific mass of about 1700 kilograms per cubic meter.

Considering each group's average concentration, Brazilian experts calculated the time it would take for each waste group to decay to a concentration level lower than or equal to 87 Bq/g. They calculated that the required time for all the radioactive wastes to become innocuous from the radiological standpoint is less than 360 years.

Table

Waste group	Volume (cubic meters)	Percent of total volume	Average Concentration (Kilobequerel per kilogram)	Decay time (years)
5	51	1,5	$3,21 \times 10^{5}$	356
4	429	12,8	$1,43 \times 10^{4}$	221
3	578	17,2	$1,45 \times 10^{3}$	122
2	769	22,9	$3,2 \times 10^{2}$	57
1	1534	45,6	26,9	0

Note: The decay time is the number of years required to reach a concentration of or below 87 Bq/g, which is the exemption level established in Brazil for theses wastes.

(Paschoa at al. 1993:31)

190 CNEN will be in charge of the repository environmental control and supervision at least to the year 2,047. ("Goiânia ensinou o Mundo a Conviver com a Energia Nuclear". Interview with José Júlio Rozental. Newspaper *O Popular.* June 5,1997.)

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institution to be a demonstration of its 1991 change of direction for peoples' concerns: the change of CNEN supervisor at the Goiás District and the opening of controlled spaces. Thus, the CNEN President accepted the recommendation, made by the "Goiânia Project" Coordinator, the nuclear engineer Alfredo Tranjan Filho, to make José de Júlio Rozental the head of CNEN in Goiânia. As the manager of the disaster emergency phase, Rozental built a bond between the institution and the population, which from the institution's viewpoint became a vote of confidence and should be used as a token. (Tranjan and Rabelo 1997:4-5) At the same time, the visits to the Temporary Waste Repository (forbidden[191] from January 1988 to March 1991) were promoted under the

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191 The Temporary Waste Repository was planned for lasting two years. According to independent and even CNEN nuclear experts, the industrial metal barrels, accommodating part of the radioactive waste, should resist for two years. After that period of time, some corrosion might be expected, resulting on the spread of radiation. This corrosion risk is already pointed out in the 1988 IAEA report: *"No leakage of radioactive materials has been detected but, in view of the high humidities and temperatures prevailing, some corrosion might be expected within a few years. Heavy rainfall was already eroding the underlying soil. Studies were under way to identify a means of permanent disposal, a process that was expected to be costly in both occupational exposure and economic terms."* (IAEA 1988:85).

Thus in 1989, the local population eagerly expected the decision regarding the construction of the permanent waste repository what did not happen. In 1990, the population faced the risk of radiation leankeage from dilapidated tonnels along with the prohibition of entering the area. In fact, the press was not allowed to visit, and the realization of a documentary for educational purpose was forbid. CNEN position raised a feeling of mystery among the inhabitants and generated actions from the Goiânia Common Council that had their access to the area denied reiterated times. CNEN summarized its viewpoint as: "(...) *regarding individuals' purposes, the radiation risks to which they would be exposed do not justify."* ("Câmara exige acesso ao Depósito Radioativo". Newspaper *O Popular*. November 7, 1990) . At the same time, the CNEN supervisor at Goiânia confirms to the press the arrival of containers which should be used to accommodate dilapidated tonnels.

Those facts illustrate also the "Cesium Policemen"'s work context, at least from 1988 to 1991, since part of them was in charge of the Temporary Waste Repository surveillance and in control of its entrance. The council woman, Denise Carvalho (PC do B), raised in 1989, her concern regarding the health condition of these policemen exposed to radiation at their work ("Preocupada". Newspaper *O Popular*. April 15, 1989).

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"Goiânia Project". The previous veto was perceived in 1991 to have been a mistake following CNEN's current policy of showing transparency. This new attitude was part of a planned strategy to acquire confidence of the Goiânia inhabitants, local politicians and from the media to the CNEN's acts.

Following the new orientation, access to the CNEN Goiânia headquarters, to the repository site and to archives was perceived as an essential element of the "Goiânia Project", which oriented its actions to the "formadores de opinião" (opinion makers): politicians[192], media, community organized groups, and students from different levels. Based on the thought that risk perception can be changed through information, and that results are better achieved when focusing on young populations, an educational program, named *CNEN Vai às Escolas* (CNEN Goes to School) was set up, in 1992, for first and second grade students. This program aimed to teach the basic notions of nuclear energy as well as the benefits of radiation used in agriculture, medicine and industry, and included talks, video exhibitions, and visits to the repository site. (Otto at al. 1996)

In 1993, the publication of articles at *"Almanaque"*, a weekly children section printed in three different newspapers __ *O Popular, Jornal de Brasília* and *Jornal do Tocantins* __ was undertaken as part of the educational program *CNEN Vai às Escolas* (CNEN/DIGOI 1995). The objective was the inclusion of a larger public __ mostly those in constant relationship with Goiânia inhabitants __ into this process of radiation

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192 Two facts illustrate the new orientation regarding the alliance between politicians and the nuclear institution. First, in 1996, CNEN granted the Goiás State Governor, Maguito Vilela, with the laurel named Carneiro Felipe (Santos 1997. Speech delivered at the inauguration of the Centro Regional de Ciências Nucleares do Centro-Oeste. Goiânia June 5, 1997). Second, in the month preceding the inauguration of the Permanent Radioactive Waste Repository, in 1997, CNEN received a group formed by politicians and Goiás state secretaries for a tour at its headquarters, in Rio de Janeiro, assuring financial support for their trip (Newspaper *O Popular* . June, 1th 1997).

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risk "purification". In fact, the newspapers are sold in three areas that historically belong to the socio-cultural network of people living in Goiânia: the entire Goiás state; the State of Tocantins, that till 1988 was part of Goiás territory; and Brasília, the Brazilian capital, inaugurated in 1960, and built in Goiás territory. To overcome the fact that low income parents of children attending public schools usually do not purchase newspapers, CNEN assured *"Almanaque"* free distribution to two hundred and four public schools, reaching around one hundred thousand students.

According to the CNEN viewpoint, the dissemination of nuclear and radiation information was part of a process to promote the de-mystification of radiation risk and to domesticate the disaster aftermath. They also wished to emphasize the knowledge engendered by the Brazilian nuclear expert personnel concerning the disaster's harmful effects. Although the need for a permanent waste repository has been declared imperative since 1987, its construction was delayed and international aid declined[193] to favor the use of Brazilian technology. Thus, at the same time that the "Goiânia Project" developed a learning program, it reinforced national sentiment, which underwrote the official position. The pronouncement made by the CNEN president at the 1988 Senate Commission of Inquiry, held at the Brazilian Congress, illustrates the relationship among nationalism, technological expertise and ideas about the disaster:

> " *Due to one or more dispersion reasons, it was detected radiation levels in many public locations, comparable to those detected on second group*

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193 In 1989, the italian group *Casagrande* offered to Goiás State Governor, Henrique Santillo, the construction of the permanent waste repository free of financial charge. Although Goiás Government appreciated the proposition, the Federal Government that, in Brazil, has the responsibility for decisions regarding nuclear issues, declined the offer. Brazil Government supported CNEN president's standpoint of employing Brazilian technology in the repository construction. ("Itália se Propõe a Construir de Graça Depósito para Lixo". Newspaper *O Popular*. July 13, 1989; "Estado Insiste no Depósito de Lixo sem Ônus". Newspaper *O Popular*. August 05, 1989)

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> *of houses. To face the skepticism regarding the real disaster magnitude, this evaluation was fundamental to assure that the radiation was confined to those points. And two techniques were employed. And, at that moment, Mrs. Congressmen* (sic), *I would say, it was a Brazilian effort to guarantee the safety of Brazilian people; and the means applied were Brazilian methods.* (My emphasis)
> *We strongly repudiated international offers that only wanted to demonstrate that, in Brazil, there was no competence or realistic condition to perform the required tasks. And we proved our competence with the decontamination results, a task we performed within eighty-two days counted from the moment of the disaster recognition to the moment that the Goiânia contaminated areas returned to former levels.* (Of background radiation.)"
> (My translation of original Portuguese text.)
> (Rex Nazaré. *CPI do Césio.* Brasília. March 10, 1988. Pages 12-13)

Therefore, from the nuclear experts' perspective, the official disaster memory allows political force to wipe out the harmful aspects of the radiation and to glorify Brazilian competence in handling radiation-contaminated material. The inauguration of the permanent waste repository on July 5, 1997, ten years after acknowledgement of the disaster, is a turning point in the process of establishing the boundaries of the memory. It symbolizes, from the CNEN viewpoint, the moment of reintegration in the social drama which the institution struggled to control. The permanent waste repository installation thus indicates that the last phase of a ritual for purifying the contaminated place, in assuring the Goiânia population and the international community, is that Brazil has adequate nuclear technology even in the context of disaster.

As a result of the "Goiânia Project", the area where the Temporary Radioactive Waste Repository was installed turned into *Parque Estadual de Abadia de Goiás* (State Park of Abadia de Goiás) that houses the Centro Regional de Ciências Nucleares do Centro-Oeste (Nuclear Sciences Regional Center - Central-West Brazil), a

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complex composed by seven units.[194] At the center's inauguration, the Project coordinator defined the enterprise as "*A Victory of Brazilian Science and Technology*" (Newspaper *O Popular*. June 6, 1997). Although the public emphasis was on the material and technological achievement, the center also displayed the nuclear experts accomplishment of symbolic purification by way of fostering its harmful marks, as I demonstrate in my following analysis.

First, CNEN chose to build the permanent waste repository at underground level. Making use of engineering knowledge, the nuclear experts promote the "burial"[195] of the radiation waste that, for ten years __ from 1987 to 1997 __ had remained visible in open space. The yellow stain imprinted on the landscape by the containers and industrial metal barrels gave place to two grassy hills. The harmful remembrance of the disaster's consequence, that is the production of radiation waste which will last for around three hundred years, is visibly eradicated. In an attempt to eliminate the fear of radiation exposure, and the individuals' ban of the controlled area, CNEN attests to the safety of taking promenades on the current fabricated green hills.

Second, the representation of an environmental conservation area surpasses the idea of a contaminated and dangerous site. In fact, the Permanent Waste

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194 The Nuclear Sciences Regional Center is composed by: Information Center; Center for Radioecology Studies and Training; Radioecology Laboratory, Permanent Radioactive Waste Repository, Laboratory for Individual Monitoring (only the project), Security Building and Observations Towers; and Maintenance Building.

195 Burial idea pointed by the headlines of a local newspaper "Cesium Waste will be Bury". *(Lixo do Césio será Sepultado.* Newspaper *O Popular*. January 19, 1997) The shape and the function of those two fabricated hills recalls old burial custom of poor Brazilian peasants. In some country areas, the burial cavity was cover up with earth and had no other ornament than a wood cross. With the passing of the years the little mount become covered by grass as the permanent waste repository hills.

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Repository[196] is just a component of the planned State Park that was set up with the purpose of insuring the return of the native flora and fauna to a former devastated region[197]. The inauguration ceremony occurred at the Environmental Day (June 5) which reinforces the "purification" process. In fact the celebration of the healthy environment chases away the image of the damaged site, the worldwide concern with the nuclear waste, and also the handicap the repository may cause to the area where it is located.

The image of a harmful landscape is domesticated. The repository site at Abadia de Goiás controls representation of the disaster also through the stylization of the radioactive danger signs. Like the fabrication of the two grassy hills, and the creation of an environmental park, CNEN incorporated the disaster reference __ cesium 137 __ into an architectural element. Thus, the Information Center, __ a unit of the Nuclear Sciences Regional Center __ displays on its facade six blue balls that support part of the building roof. The reference to the blue glow that fascinated the first contaminated individuals, and motivated them to use the radioactive power as carnival glitter, is contained in those concrete balls. This could be perceived as an attempt to displace the effects this blue light had in the memories and current lives of affected people. In this way it also suggests the purification of the radiation aftermath.

In promoting the sanitation of the disaster marks, CNEN establishes the limits of what to remember, and provides narratives of disaster closure. In this way, the

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196 The Permanent Waste Repository is 65 meters' length, 20 meters width and 5,5, meters height. (Newspaper *O Popular*. January 19, 1997).

The whole area of State Park of Abadia de Goiás is 1,600,000 square meters. (SAE - SECRETARIA DE ASSUNTOS ESTRATÉGICOS. Folder of the *Centro Regional de Ciências Nucleares do Centro-Oeste.* June1997).

197 The intention is to turn it into a tourist attraction (*New York Times*. May 3,1995).

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ideal of Goiânia as a healthy city re-appears through the accomplishments of the "Goiânia Project", through the work of local government, business sectors and, nuclear experts. In both cases, the use of the regulatory memory is a major aspect of the sanitary process, because the health of the city depends on the accommodation of radiation experiences and on the containment of harmful nuclear images. The disaster should be re-framed and localized on the past as a way to conceal the bodily memory that remains and is embodied on survivor's remembrances. The official account of the disaster makes use of the scientific knowledge to reorder the contaminated places and symbolic pollution which contributed at the same time to set up a claimed Brazilian expertise in handling radiation disaster, radiation victims and, radiation waste repository.

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Plate 16.
The Permanent Waste Repository at the right corner.
The visitors were participants from the International Meeting "Goiânia 10 Years Later".
(From Telma Camargo da Silva 1997)

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15. DISASTER AS A PREVAILING EXPERIENCE: SURVIVORS BODILY MEMORY

> *"The survivor is one who remembers. (...) Survivors embody memory, their bodies the texts of memory, their voices its textures. They stand at the juncture of memory and history, tugging by their very presence at the boundaries of each."*
> (Sturken 1997:254)

The narratives and experiences carried and lived by the radiological disaster survivors disrupt the official assumption of disaster closure. Survivors' everyday experiences point to the fact that their current lives are a constant re-enactment of the radiation disaster and not just a representation of past events. Unlike the official recollection of the disaster, which depends on the built environment and upon the knowledge produced in the texts of biomedical and nuclear experts, the survivors remember also through the inscription the disaster made on theirs bodies and the impacts __ symbolic as well as biomedical __ they suffer in their present lives.

Contrary to the official standpoint that the disaster ended in the past and is brought to the present through history, the survivors update the event in the experience of their bodies as a place of memory. My experience with Goiânia radiological disaster survivors indicates that this performative memory (Connerton 1996:2) is practiced in different ways. First, it indicates the bond built among individuals and the radiation experience, which last beyond any decontamination or sanitary process. Second, it is used to resist official interpretation of the disaster.

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15. 1. Rituals of Disaster Actualization

" I am Tereza-137. I want to offer to Colonel Artur[198] this 137 name. I want that the authorities respect it till the end of the days. I want to have this name written over my tomb. This is my sepulcher number. And I would like to... __ If God takes me because, we don't know the day or the hour __ (I am not afraid of dying from the cesium problem) but, you know that we are mortals. That I can dye today or tomorrow. Can be any way, any time... So, I would like to donate this 137 to my friend Colonel Artur. This 137 should turn to him and it must be respected. Because, this number, you know, this is a sad number. A disturbing number... It is a... A... A secret number... And the people have... Fright. Fright and respect. And when I say that I call myself Tereza-137, everyone stares at me and becomes afraid of touching me even with a finger. I mean, this 137 is dangerous. So, Colonel Artur is a young man. I wish him a successful career (...) because he is a wonderful person. He helped me. He extended me his hand and gave me his support when I told him that I would like to take this identity: Césio 137. So, here, by the way of this recorded message, I left to my friend Colonel Artur a hug. I left him a message. Because I transfer this 137 only to him. This is my request. A request from a Cesium victim. A suffering person. And this 137 only should be transferred from my person to his person: Colonel Artur. And he can use this name only after I have left this world. Because this is the name I am asking to be

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198 Colonel Artur is the Colonel of the First Hour whose participation at the disaster emergency phase I present at the chapter "A Soldier Must Overcome his Environment".

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> *written over my tomb, one day __ because one day we have to leave this world. This is not because I am afraid of dying from the... The cesium. This is because all of us some day will leave this world. This is our destiny. And leaving this world, this number, I will donate it to him. For him to use this name 137. If it would be possible, wouldn't be? And also that this name should be written over my tomb. I want to take (*she put an accent on this last word) *the 137. I am also launching my candidacy to the municipal council: 137. I want to assume the name: Tereza - 137 when I am launching my candidacy. I want to assume this number: 137. I want to assume this number to recall the stigmatization we suffer. The people already know me as Tereza - 137. I assumed this for good."*
>
> (This narrative was delivered as message to Colonel Artur. On April 5, 1989 Tereza had the assistance of Suzana Helou, a FUNLEIDE psychologist, to tape record it. In 1997, Colonel Arthur offered me a copy of this message)

In 1987, Tereza like Margarida lived at 68, 57th Street. I retold Margarida's story as a radioactive patient in a preceding chapter. Like João __ whose voice opened the present chapter __ Tereza actualizes the disaster through the constant repetition of its major reference: césio 137. While João writes and rewrites the 137 as a number, __ the only one he recognizes__ Tereza took this numeral as a name. For her, this new identity is a public expression of the unalterable mark that the radiation had already made on her cells.

As a metaphor of the effects of radiation exposure on an individual lineage, she needs to have a descent to perpetuate her new name. In this way, the

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message she recorded for the Colonel of the First Hour represents a testament and the donation of a gift: a person's name. Tereza and João act to re-order the contamination they suffered. Nevertheless, in their cases the cleansing does not erase the disaster as a "sanitary process". For them by actualizing the disaster with meaning in their everyday lives, they keep alive disaster memories.

Preservation of the symbolic attachment to the disaster parallels the physical __ biomedical__ tie the "radioacidentados" experience as consequence of exposure. As radiation disaster patients, they carry with them uncertainity over their own future and that of their children. Their ritual, verbal and gestural repetitions indicate the permanent awareness of that condition.

15. 2. Bodily Memory and Resistance

The "radioacidentados" underwent biomedical scrutiny and they suffer a continuous biomedical monitoring of their bodies under the control of the FUNLEIDE and the nuclear experts. Following the "sanitary process", carried out by the alliance of government and nuclear experts, the "radioacidentados" are expected to comply with the official account of their ailments and recognize that *"everything is under control"*. But, the continuing face of death, fear of cancer, unstable health care, inadequate financial compensation and the effect of stigma are not contained in the nuclear expert's mathematical definitions of illness, by biomedical classification of symptoms or in the statement that *"everything is under control"*. Thus, they resist the official account of their ailments and they unveil their current suffering in defiance of the idea of the Foundation as a container. At the same time, as official disaster victims, the health care should be provided by FUNLEIDE which leads to a struggle between "radioacidentados" and the health team over the contested interpretations of suffering.

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In fact, based on narratives I collected and observations I made, I perceived that public biomedical discourse delegitimizes patients' claims of radiation-related distress.[199] To counteract the continual delegitimization of their suffering, Foundation patients make use of the media to present their claims. In such cases, official disaster memory sustained by biomedical knowledge is confronted by the survivors public demonstration of their suffering. Survivors' bodily memories disrupt official disaster representation that *"everything is under control"*.

Governmental control over the Foundation board of directors intensifies an already difficult relationship between biomedical professionals and patients. According to some individuals I interviewed, FUNLEIDE's physicians never tell victims their real health condition because as Goiás state government employees they are under supervision. Their official statements conform to local government definitions of disaster closure: the radiation is controlled and official patients are said to be doing well. This results in a double problem. From the patients' perspective, they cannot rely on most of Foundation physicians since their claims of illness are perceived as imaginary. In addition, according the biomedical viewpoint, patients' claims are not radiation-related.

The victim's perception that professionals are incapable and unreliable is reflected in the narratives I collected, as in Margarida's account:

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199 Garb's examination of Chelyabinsk (Russia) communities that were exposed to radiation from nuclear weapons facilities reports on biomedical practitioners delegitimation of survivors claims on radiation related suffering:

"Another official at the same meeting (which was attended by region's leader in September 1992), *a physician, claimed that he had gone door-to-door in communities like Muslyumovo where people were convinced that all their ailments were due to radiation, and that he concluded that their illnesses were caused by their low standard of living, not by radiation."* (Garb 1997:320)

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"Because you know, we receive health care from people... Personnel that... They are, you know? Government employees. So, who will be against Government opinion? They can lose their jobs, be fired. So, at the Foundation, all those in there are manipulated by government... I am quite sure that there is a... a cesium victim there, who got a cancer at the stomach. But the physicians said that it is not. That this person has gastritis. God saves! Poor guy! It is horrible what he has been through. He weeps all the time. He already went through a great number of surgeries. He stays at this Samaritano Hospital. And... now, when, someone came to a doctor and asked, he will say that everything is fine. So, everyone... we... I... I mean, all the victims think the same way: physicians there, at the Foundation, they are manipulated. We think if we go to another doctor, and ask to have other physical exams, we will feel more confident. Many times we look for different doctors, from outside the Foundation. Most of the victims do this.

We don't trust the doctors over there. Most of the time we go there feeling miserable. Within great pain and then they say:

"__ No. What you are felling is psychological!"

So, They tell us that our pain comes from our minds:

"__ Your distress is psychological. What you claim, it is not happening for real!".

At the beginning we believed in those doctors more than now. But not now. The only one we trust today is that doctor P.

You know, after the disaster our strength dropped. Ah! I am much more weak. Everything I do, I feel tired. I now I am

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getting older, and this makes a difference, but before the disaster I used to work all day without being tired. Nowadays, everybody that was involved in the disaster feels the same way. Tired all the time. And we constantly catch cold. But when we claim that we have lost strength, Foundation doctors say that this is a psychological problem.

Do you know what happens to my daughter? She started to feel very badly in her leg. She was in pain and her leg started to swell. I took her to the Foundation doctor, the one who is the head of physicians team, and he said that it was nothing, what I needed to do was to massage it and he gave me an massage ointment. So, I followed his orientation. And each time I touched my daughter's leg, she started to cry. And she cried all night. I couldn't sleep with her weeping. I returned to the Foundation and they kept saying that it would get better. That I needed to be patient. After a month, I decided to visit a doctor outside the Foundation. I didn't have money to take a bus, so I walked to the Foundation building with my daughter and asked them to take me to a hospital. I had to argue with the President:

"__ You have to call a hospital. Doesn't matter which one. Because today, I will take my daughter to have a different exams. I will not leave here until you put me inside a hospital"

They took me to this São Marcos Hospital. Over there, after clinical examination, the doctor said:

"__ Your daughter almost lost her leg. How could you wait for so long? She has a big infection."

She stayed almost fifteen days at the hospital. And I ask you:

__ Is her distress coming from my mind? Is this a psychological distress?" (Margarida. Interview from February, 1997)

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From the physician's perspective, official victims are predisposed to exaggerate their ailments and their illnesses are not organically related to radiation exposure:

> *"The children under my care have the same kind of pathology as the general population, do you understand? They caught flu, had tonsil, pneumonia, they fall and broke their arms, have skin diseases, and even have been born with genetic deficiencies... Because you know that 3% to 5% percent of the general population will be born with some type of genetic deficiency. And this is not related to radiation. I mean 4%, 5% of the entire population. Among the children at the health monitoring program, I do have two, three children born with genetic deficiency, do you understand?*
>
> *Most of the children belonging to the victim population, if you take a look at their medical records, they have an exaggerated number of doctors office visits. The reason is not because they are sick but because it is too easy for them to come visit me. If a child has a temperature at night, the next morning the parents are here at the Foundation. This high level of medical visit could be perceived __ that is their parents' understanding __ as they have low strength. I mean, the perception is: they are constantly seeing the doctor because they have low strength. In fact, that is not true. The excessive number of visits is due to the free and easy access they have to the doctor.*
>
> *It is the same for the anemia issue. When I returned from Japan*[200]*, everybody here was talking about the victims having*

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200 In early 90's, this physician spent eleven months in Japan studying Hiroshima bomb effects on children whose parents have been exposed to radiation.

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anemia. So, I decided to do a research and I defined a group control. I found in the general population the same level of anemia as I observed in the victims population. I mean, this is a low-income population, and for that reason they have anemia. This is not radiation related, do you understand? At that time, there was a victim __ she gave me a hard work __ She had a profound anemia. But, we discovered later on, that her illness was inherited from her father. It was not for having being exposed to the radiation. Even the NGOs got involved in this question.

Most of the children in this group don't want to pursue their studies. They go to school and make a mess. They have headaches, don't learn to read... If you ask for an organic test, you won't find any genetic problem. Now, they live in a disturbed world, and usually they live with troubled families which spend all day talking about distress. Do you think that they go to school to study? It is difficult. So, that is the cause of their problem. If they have difficulty to learn it is not because of the radiation acting on their brain.

So, the radiation patients feel sick, and I don't have the arguments to prove to them that they are not. "

(Physician J.F. Interviews from February and June, 1996)

Like the "cesium policemen", the radiation disaster patients face biomedical denial of their suffering. For both groups, to remember is to make the past actual, assuring the continuity of the disaster marks. Consequently, their narratives and their bodily memory are claims for permanent assistance. According to the official viewpoint, the knowledge engendered by the disaster survivors must be wiped away just

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like any other disaster marks. Their experience is disqualified, considered inadequate, compared to the knowledge produced by biomedical and nuclear experts. Survivors' reenactment of the trauma and past experiences of the disaster is a continued defiance of the narratives of disaster closure.

In this fourth chapter I focus on the power dynamics of memory production in the aftermath of the disaster. In the case of catastrophic events, the process of remembering points to an intricate field of forces related to responsibility, financial compensation and health care. The production of disaster knowledge arises from a confrontation between official memory, sustained by governmental representation, and subjugated knowledges experienced by survivors. Along with the survivors' narratives and experiences I analyze the ways in which the built environment can be shaped semiotically to condense the verbal interpretations around certain emblems and thus convey imperative messages to the holders. The sanitary process undertaken by local government, by the Goiânia economic sector, and by CNEN to domesticate radiation damage and risk, generated a symbolic purification of the city, which included the erasure and resignification of the marks that the disaster had imprinted upon the urban site. I claim that while official memory addresses the arena of public politics, it simultaneously resonates for the victims as silence, de-legitimation, and with the subjugation of individual bodily memories. This process of disaster-meaning-making defines who are the victims, which are the authorized languages of suffering, and which

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the authorized remembrances. As a result, social suffering is increased for those already carrying the impact of the disaster in their everyday lives.

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FIVE
CONCLUSION

"To accomplish this analytic feat the illness experience is frozen at a certain moment as if the illness narrative had reached completion or the illness course had terminated at a final stop. Of course, in the actual flow of illness experience, there is no final stop. Even death is followed by bereavement and the further and influential trajectory of the remembered past (for the family and the practitioners). The anthropologist creates the illusion of finality and continuity and coherent meaning, when in fact even the simplest illness episode has more complex resonances than can be accounted for by the analytic models that are available to us."
(Kleinman 1995:100)

As stated by Kleinman, the illness experience continues beyond the anthropological glance. The experiences of the disaster survivors echo this refusal of disaster termination with the ending of anthropological fieldwork and the delivering of his / her interpretation. Because disasters are processual phenomena rather than events isolated and temporally demarcated in exact time frames (Oliver-Smith 1999:30)[201], they imply a social dynamic that leads to a myriad of interconnected phenomena. They also

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201 Early studies of disaster assumed that disasters were departures from "normal" social functioning and that recovery meant a return to normalcy. They were perceived as *"kinds of breaks in pattern and isolated and annoying interruptions"*. (Wallace 1956, quoted by Zaman 1999:193).

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unfold multiple interpretations not confined to the emergency phase of the disaster. Also, both illness and disasters are as much social texts as material events whose existence arise from natural forces and hazard processes set in motion by technology as well as from the sociocultural construction of meaning and explanation. Thus, in the Goiânia case, the sufferings that affect individuals impacted by the disaster result from the effect of the radiation on their bodies but also from personal social vulnerability and from the process of disaster meaning-making (Comaroff and Roberts 1981; Button 1999).

Due to radiation peculiarities, in which physical effects last for decades, the very materiality of the radiation disaster advance far beyond its emergency phase engendering a continual process of meaning-making. Radiation associated with twentieth century technology __ including therapeutic and agricultural usages __ traces its roots to nuclear weaponry (Lifton 1967; Yoneyama 1993; Garb 1994, 1997; Barker 1997); to the increase of vulnerability for minorities groups as the cases of the Saami, Navajo and Marshallese peoples illustrate (Alcalay 1988, 1991, 1992, 1993, 1995; Dawson and Madsen 1993; Stephens 1995; Paine 1987, 1989; Chruchill and LaDuke 1987; Barker 1997); to "nuclear nomads" and forced migration (Alcalay 1991:96), and to industrialization (Behler 1986; Clark 1987; Kaplan 1992; Singer and Baer 1995). As a result, the introduction of nuclear technology in the mid twenty-century contains conflicting ideas. On one hand, there are those who emphasize the production of "cheap and clean" energy that would sustain the industrialization of western countries and the establishment of knowledge that would provide effective therapy for many ill people. On the other hand, there are those who would stress the harmful aspects of the use of nuclear technology. Consequently, a radiation disaster carries the conflicting images of the "Atomic Age", grounded in the powerfully political world of social relations and the

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realm of the secrecy (Garb 1997: 324-326; Gould 1990; Malheiros 1996)[202]. For that reason, while the struggle over interpretation is pertinent to other kinds of disasters (Nash and Kirsch 1986, 1988; Susser 1985; Das 1998 [1995]; Button 1999; Rajan 1999; Quesada 2001), radiation disasters materialize in singular ways the struggle over knowledge production and foster the discussion about the long and medium term persistence of the catastrophic event in the everyday life of the survivors (Lifton 1967; Yoneyama 1993; Garb 1994, 1997; Barker 1997; Acalay 1995; Da Silva 1997, 1998a, 1998b, 2001).

I am aware of the danger of being trapped by the illusion of my anthropological glance, but I will advance some general points that have been woven into the preceding chapters. The coherence I search for is framed first by the processual approach I undertook. Thus, the disaster is not frozen as an "extreme event" in time. The analytical model I pursued focuses on the field of forces that engender meaning and facts, opposing interpretations and experiences, for ten years, that is from 1987 to 1997. Dealing with notions of social suffering[203] and vulnerability[204], I highlight the social

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202 Concerning the secrecy of nuclear activities in Brazil, the CNEN, by law nº 4,118, from August 27, 1962 (clause nº 27) can proclaim its activities secrets as soon as the institution decides the necessity for undertaking this measure (Machado 1987:345).

203 This concept expands the scope of the Anthropology of Illness and Health because it understands that atrocities related to welfare, poverty, legal, moral, and religious issues that imply, for example, trauma, pain and various kind of disorders are simultaneously health, political and cultural matters. (Kleinman at. al. 1997: IX).

204 *"In the recognition of the failings of the conventional and technocratic approaches to address the social dimensions of vulnerability, an alternative approach emerged in the 1980s which puts greater attention on predisaster social issues in disaster analysis. The approach, variously known as the sociohistorical, political economy, or vulnerability approach, does not deny the significance of natural hazards as trigger events,* (the same consideration can be made to the so called industrial disasters - My

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construction side of disasters and individual suffering. From that perspective, the struggle over knowledge production discloses power relationships in which not all of a disaster is concerned with deciphering the event. In using those two concepts __ social suffering and vulnerability __ I integrate the topic of disaster within the sphere of the Anthropology of Illness and Health, the angle from which I analyze my data.

Along with my examination of the Goiânia radiation disaster, some questions related to the frame of the disaster have been addressed: who proclaims the occurrence of the radiation disaster? Who acknowledges its closure? Who defines the victims of the disaster? Which recollections have surfaced in the public sphere? Although the experience of the survivors is beyond my personal regard, the discussion about the field of forces that engendered the knowledge of the disaster for an entire decade helps us to understand its resonances for the future.

16. TECHNICAL RATIONALITY AND MORAL COMMUNITY

By presenting arguments based on legal[205] and technological expertise, the Brazilian National Nuclear Energy Commission *(Comissão Nacional de Energia*

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comments) *but focuses largely on the structural and systemic causes that generate disasters by making people vulnerable"* (Zaman 1999: 193).

205 As stated by Law nº 6,189 of December 16, 1974 and by Decree nº 75,569 of April 7, 1975), CNEN is responsible for regulating, conducting, planning, supervising, and monitoring any activity related to the use of nuclear materials, ionizing radiation and radioisotopes as they involve individuals and/or facilities. It has also the responsibility and power to regulate the security and disposal of radioactive materials as well as for licensing the purchase and transport of radioactive sources. CNEN is also in charge of scientific research (Statement made by Rex Nazaré at Departamento de Polícia Federal. Superintendência Regional em Goiás. 1987:176-177; IAEA 1988: 15- 16).

In 2000, thirteen years after the Goiânia disaster, the regulation remains the same. The physicist Anselmo Paschoa, former Director of the CNEN section of Radioprotection, Nuclear Safety and Protection, delivering a speech at the meeting "Radioactive Waste at the New Nuclear Plants Era", argued for the need of split the

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Nuclear - CNEN), established the boundaries of the Goiânia Radiation Disaster. The institution acknowledged the event as an "accident"; recognized a state of emergency; established the chronology of the disaster events; defined the spaces contaminated; identified affected individuals and grouped them according to the level of physical contamination detected by instruments and measures; set up the medical follow up program, and marked the end of the disaster in announcing the city free of radiation contamination in early 1988. CNEN also confined the disaster to the past, proclaiming it as a page in history by inaugurating the permanent waste repository on July 5, 1997.

Following this delineation of the disaster frame, the Goiás government acted with CNEN to control its boundaries and to purify the contaminated environment from the material and symbolic marks of radiation. Along with financial compensation, the government installed the FUNLEIDE in order to support and to deliver health assistance to those classified as "radioacidentados". While the state and its institutions performed relief actions during the emergency phase, they produced also the discourses on the meaning of suffering that arose as the authoritative understanding of the disaster. Acting as a container, the state bureaucracy, nuclear experts and organized medicine limited the suffering and claims of those already classified as "victims". The scientific discourses encircled survivors'' narratives each time their claims surfaced in the public sphere. These discourses operated also in the private encounters of practioner and patient. Individuals'' accounts of ailments and distress were denied or seen as an exaggeration, or

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CNEN in two different agencies. One to promote and conduct the nuclear activity; the other to supervise and monitor those activities. In his words, in the current state of law, "*There is an evident conflict of interest. It is impossible to obey two masters at the same time.*" (JC E-Mail. Number 1,580. July 11, 2000)

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classified as "psychological"__which in the perception of the FUNLEIDE medical team means "unreal".

By the same token, in the medium term of the disaster's aftermath, state agencies supported by scientific discourses deligitimized any individual's claim of health conditions associated with radiation. That was the case of the "cesium policemen" whose suffering confronted a process of denial. Both "radioacidentados" and "cesium policemen" had their narratives silenced and their experiences invalidated, while the competence and expertise of nuclear and medical practitioners were ensured by state agencies. As in the Bhopal disaster, the Goiânia case points to what Das defines as "existing theodicies of the state" (1998: 137). In other words, "*the languages and methods by which agencies such as the bureaucracy, organized medicine, and the legal profession produce discourses on the meaning of suffering that "legitimize the producer of the discourse rather than the victim*" (Das 1995 In: Rajan 1999:272). The multiplicy of voices and memories that parallel the diversity of social groups involved in the fabrication, responses and surviving experiences are suppressed by the official knowledge and memory of the disaster. Thus the technical rationality of bureaucratic institutions and the paradigm of "metric suffering" of technoscience enclose the experience of those who endure suffering in their everyday lives at the same time as they favor the closure of the disaster.

This closure has different meanings for the Goiás state government and CNEN. For the first, state control over the built environment, the guarantee of radiation-free spaces, the erasure of the symbolic marks of the disaster and the restriction of "radioacidentados" claims by FUNLEIDE is a response to the discrimination that the region and its inhabitants suffered when the disaster was acknowledged in 1987. The attempt to silence and to disavow the survivors' chronic distress supports the "purity" of

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the idealized city and enables the city's recovery from economic crisis. For CNEN, the closure suggests to national and international communities that Brazil can adequately manage nuclear technology even in the context of disaster. From this perspective, there is an elision of nationalism and the scientific/nuclear wisdom. Thus, the number of affected individuals and contaminated spaces as first assessed must prevail in order to confirm the rightness of the technical procedures undertaken in 1987. As a result, the "cesium policemen's" voices are de-authorized. Scientific knowledge is thus used more to promote the appropriateness of the actions undertaken by state agencies in the past than to investigate the policemen's current complaints.

This process of disaster-meaning-making defines who are the victims, which are the authorized languages of suffering and also who are the heroes. In the context of disaster, due to the crisis and to the dangers involved in the responses to it, workers acting during the emergency are potentially candidates to perform heroic actions. However, the official and community recognition of which professionals may be considered a hero result also from the process of the framing of the disaster, that is, from the same field of forces that establishes the victims. In the case of Goiânia, CNEN used its technological expertise to control this symbolizing process. From its perspective, the notion of hero consists of individuals working in unusual conditions and performing exceptional duties, as for instance: leaving their families and jobs situated far way from Goiânia; working around the clock with little rest and poor food; using heavy and uncomfortable clothes and masks; attempting to control an "invisible" enemy which requires special knowledge and the fabrication of a specific body. According to nuclear experts the radiation disaster hero is the one who knows and manages his / her own body in context of risk. His / her challenges consist of decontaminating without being contaminated. As one nuclear expert from the Goiânia emergency team remarked:

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"Each one of those individuals that work at the nuclear sector knows which are the limits of the doses that they can receive. They know the limits and they know if they work within the limits already specified they are not at risk, Ok? So, the guys know. This is part of the "risk voluntary" (i.e., calculated risk). *You go there and you are able to calculate. The pen* (QFE pens-radiodosimetric) *is the instrument the self-controlling tool, while the film* (film badges), *which everyone had, is the document that delivers to the institution the control of those data, right?* (...) *All those hot boxes, those that we call more "wild"*[206]*, I worked myself on the process to take them to the waste repository. I went there. I added the alloy and sealed them. I took care myself. And when the disaster was over, I had an accumulated dose of 780 mRem. So, this fright, this panic is due to the lack of knowledge. Because if you perform all your activities in a technically good manner, you can work even in a high radioactive area so that you end your work term with very low level of radiation exposure. I have a very low level of radiation exposure. Even Rex* (the President of the CNEN at that time) *teases me: How do you get it? And, I answered him: You get it by taking care of yourself. You lose half of your own time taking care of yourself and the other half you spend on taking care of those who don't know how to take care of themselves, do you agree with me? This is really self-control. It is ... And I received all this radiation dose all over my body ... It is like having an X Ray of my whole body. And*

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206 He used the word "wild" to express the magnitude of the radiation which would not be domesticated. The material inside those boxes were the most dangerous among the waste from the disaster, and after being collected and enclosed inside the boxes, they should be quickly transported to the waste repository.

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you have to manage it, your own body. This is part of the nuclear training."
(Mateus. August 29, 1996)

From that perspective, technical bureaucratic power does not define the policemen as carrying out heroic activities. According to nuclear experts, the policemen performed activities as defined by their professional identity, that is: they evacuated contaminated individuals from affected houses, carried contaminated persons to the Olímpico Stadium and guarded the physical area of the disaster. They also claim that MPs stayed outside of the limit defined for nuclear workers, they were not susceptible to dangerous conditions and did not do tasks like those the CNEN technicians faced. In their viewpoint the heroism of the police force is restricted to their confrontations with bandits and criminals not in the containment of radiation.

In 1997, during the International Conference *"Goiânia Ten Years Later"*, CNEN included in the participants' official packet a booklet with the list of the disaster "ex-combatants", to use the institutions words. Although in the introductory text there was mention of workers from the Brazilian Army, Police Force and Civil Defense, the assorted names that fill the pages of the document are exclusively those from the nuclear sector. This document embodies the symbolizing process controlled by CNEN to ascribe the frontier of the disaster in terms of certain kinds of victimization and heroism.

In sum, the "Cesium policemen" are not perceived as victims or as heroes according to the technical rationality of bureaucratic institutions. This conceptualization echoes the Goiânia inhabitants' perception of the health complains of the "cesium policemen". Despite the fact that the local mass media published the events related to the policemen's suffering and the support they received from a small portion of the congress, the general Goiânia population did not demonstrate solidarity with them. The reasons for this are found in the inhabitants understanding of the policemen's

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professional identity. At that time, the general population viewed the police force as hostile to the citizens in Brazil. Policemen have been accused of robbery, the use of torture against prisoners inside the prisons, and in killing of ordinary people. The public remembers the images of the Carandiru Massacre where policemen murdered a hundred and eleven prisoners at the Carandiru Penitentiary in the city of São Paulo in 1993, the assassination of twenty one persons by ten policemen at Vigário Geral, a section of the city of Rio de Janeiro, in 1993, and the killing of nineteen members of the Landless Movement in Eldorado dos Carajás, in the state of Pará, in 1996 by members of the Police Force. For many people these are the emblems of ongoing police violence against ordinary citizens. These events provide the context within which the Goiânia population interprets the "cesium policemen's" complaints.

This denial of the "cesium policemen's" suffering point to the control of the bureaucracy over the symbolic aspects of the disaster, and it also reveals the operation of a "moral community". According to Morris (1997) and Kleinman et al. (1997) the question of social suffering brings a moral orientation into social analysis. Membership in a moral community gives direction to the way in which entitlement can be claimed. That is, we grant suffering exclusively to those belonging to our own people. The notions of hero or martyr are engendered within a moral community that does not extend its borders to include the enemy, the mad, the marginal, the foreign, the other, or the bad. As the authors claim, we do not acknowledge the destruction or distress of beings outside our moral community. That is why the voices of the "cesium policemen" finds no broad acceptance. First, in the nuclear community, a community based on technical rationality, the "others" are those whose activities and feelings are not appropriate to the identity of "nuclear professional" and the related idea of "heroism". In this sense, the 1997 International Conference booklet is part of the disaster and a response to it in the

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ways it made public the definition of disaster heroes. Second, according to the nuclear experts teams and Goiânia inhabitants' understandings, "cesium policemen" are considered to be members of a Police Force that acts against individual human rights. They are thus considered to be as pernicious as the criminals they were supposed to fight.

17. VULNERABILITY AND THE FRAMING OF THE GOIÂNIA RADIATION DISASTER

Many studies on disasters indicate that the impact of catastrophes affect societies differently. The failure or inadequacy of a group of individuals to face a catastrophe is an essential component of a disaster (Oliver-Smith 1999:29). Consequently, *"A disaster is made inevitable by the historically produced pattern of vulnerability, evidenced in the location, infra structure, sociopolitical structure, production patterns, and ideology, that characterize a society"* (Id.). Social Science investigation starting in the late eighties strengthened the understanding of factors that lead to peoples' vulnerability, for example, gender (Peacock and Gladwin 1997; Enarson and Morrow 1998; Hoffman 1999), social class (Blaikie at al. 1994), language (Nash and Kirsch 1988; Button 1999), religion (Bolin and Bolton 1986), and ethnicity (Bolin and Stanford 1991; Stephens 1995; Barker 1996; Garb 1997) among others.

The Goiânia disaster pointed to issues of poverty; habitation patterns; the living conditions of unskilled workers in urban setting; friendship, kinship and occupation networks; gender; rural migration and nuclear regulations as conditions contributing to individuals' vulnerability. Mostly, the Goiânia case uncovers the framing and the struggle over disaster meaning-making as an important component of people's vulnerability and the causation of individuals' social suffering. This aspect resonates with anthropological studies that establish that there is a manufacturing of a suffering

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where the ideology of knowledge is an important element (Young 1982, 1993; Comaroff 1982; Lindenbaum and Lock 1993; Lock 1993). In fact, the technological knowledge provided by institutional power subjugated the "radioacidentados" experiences of illness, contained "cesium policemen's" complaints and interfered with the actions carried out by the Associação das Vítimas do Césio and of the Associação dos Cabos e Soldados. Because these social groups do not have the political power to contribute to a health assessment made by independent biomedical and nuclear experts, their interpretations and experiences are suppressed within the official expertise account.

These subjugated knowledges remain in the everyday lives of survivors and in their bodily memories. In fact, survivors' bodily memories tangle with official disaster memory, generating instability where it was supposed to have certainty. The denial of survivors' illness claims has implications for the assessment of the long term health effects of exposure to low levels of radiation because of the bias in the studies. Uncertainty over radiation's known effects along with stigma, fear, lack of jobs, the instability of Brazil currency, pension variability, governmental services precariousness, medicine shortages, and uncertainty about the implications of dose exposure are some of experiences and feelings that survivors encounter. Thus, while official memory addresses the arena of public politics and the closure of the disaster, the victims must also live with silences and with the subjugation of their bodily memories.

For the disaster survivors, the emergency phase __ the first days of the disaster acknowledgement __ represented a condition of liminality (Turner 1982). The social, historical and cultural distinctions among different groups living in Goiânia were erased by the public sharing of the impact of the disaster. Suffering and stigma affected the members of the whole community. The experience of surviving the "biggest radiation disaster" outside a nuclear plant explosion built a social bond that defined, for a

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short time, an area of communality __ a communitas of distress. Shortly, afterwards, the meaning-making of the disaster that came with the control of the spread of the radiation reassembled individuals in a structured system of victimhood, heroes, and "radiacidentados".

The return to an earlier social form brought with it the reappearance of social class and professional distinctions. Nevertheless, the structure emerging in the aftermath of the disaster imposed on some groups' new disadvantages. While inclusion in the official list of affected victims should indicate, at least in government documents, eligibility for health care monitoring and, in the case of "radioacidentados", financial compensation, the notion of victim is also a burden. In fact, the process of symbolic closure of the disaster produced an elision of the victims and the view that they lacked education, good hygiene, and that they were robbers and backward people. In the post-disaster era victims experienced a new order of social and symbolic inequalities. This new classification is controlled by institutional power and leads to increased stigmatization and increased social suffering. The bureaucratic measures which assured the purity of the contaminated city also made the survivors and their children voiceless. In fact, many members of the victims' first generation that I found (some were very young in 1987) do not want to talk about the disaster or have pictures taken with their parents. One teenager, preparing to go to the university, told me she is unable to bear what her relatives have been through, so she has conceal her identity as a child of a disaster victim and a victim herself.

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18. RADIATION DISASTER AS AN UNFOLDING EVENT

> *"From one day to the next, Chernobyl made conscious what has already been true for a long time: not just in the nuclear age, but with the industrial universalization of chemical poisons in the air, the water, and the foodstuffs as well, our relation to reality has been fundamentally transformed. To use a famous analogy, private control over the means of perception has been overthrown. The senses have been expropriated* (italic on the original)__ *in all the splendor of their images of reality.* (...) *our senses have become useless in the face of the atomic danger."*
> (Beck 1987:155)

Social scientists working on chronic pain have "*repeatedly documented that pain patients feel biomedical practitioners routinely delegitimize the experience of their illness, pressing them to believe that it is not real or, at least, not as serious as they fear it to be (Hilbert 1984). Their subjective reports of distress are challenged, and disconfirmed. They feel violated by practitioners, betrayed by biomedicine*" (Kleinman 1994: 170). In the case of the radiation disaster, I suggest that this delegitimation leads to continuous expropriation of the survivors' sufferings. This is not just a struggle over the production of competing narratives but also a struggle over compensation, culpability, and long-term health care monitoring programs.

Echoing Beck that our senses are worthless to face the nuclear age, I claim that the paradigm and the instruments used to assess the victims of a radiation disaster are inadequate, an observation confirmed by other anthropologists working at other radiation disaster sites, as in Scandinavia with Sami people affected by Chernobyl fallout (Stephens 1995); in Marshall Islands with individuals affected by U.S. Nuclear weapons testing (Alcalay 1993; 1995; Barker 1997); and in the Chelyabinsk region in the Urals, Russia, with citizens affected by the contamination from the weapons plutonium production center (Garb 1997).

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In Goiânia, because biomedical and nuclear expertise relies on metric and mathematical calculation, the authorities narrowly define the identity of emergency workers, they are unable to perceive interstitial spaces where individuals circulate, and their viewpoint is unable to include all the angles of the suffering. As indicated in earlier chapters, (1) many professionals from Goiás institutions worked during the first emergency phase of the disaster in areas contaminated by radiation or later at the temporary waste repository. Because the "cesium policemen" were not identified as professionals from the nuclear sector, however they did not receive the instruments to assess radiation exposure. Also, the length of time they remained at the affected areas was not registered. As a consequence, they were not registered for the radiation dose they were exposed to during their work. It is not possible, using a mathematical definition of victimhood to assess whether or not such professionals were physically affected by the radiation; (2) these professionals were not trained to have "*rational control over their body*", as were the nuclear experts, thus they were more vulnerable to occupational risk; (3) even in a state of radiation emergency, individuals follow cultural, social and emotional bonds to circulate in urban spaces. Although the city had high wooden fences enclosing the hot spot areas, rope barriers isolating some affected zones, and black plastic over some paved street, people circulated in contaminated spaces. Some children played in radiation contaminated yards, neighbors helped people with acute radiation syndromes, policemen ate contaminated mangoes, "radioacidentados" escaped from the shelter and hospital; policemen slept on contaminated ground, and lay down on mud at the temporary waste repository. Those were but some of the circumstances where individuals risked radiation contamination, illustrating the uselessness of mathematical calculations to portray risky places.

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Based on similar work done with other radiation-impacted populations, I believe that ethnographic data, long-term fieldwork and in-depth recollection of survivors' narratives and experiences can offer a better understanding of the impact of a radiation disaster, and can illuminate the social suffering and the important health implications for the survivors. I argue that in the context of the radiation disaster the unveiling of subjugated knowledges through an examination of the struggle over memory production is important for an agenda that advocates human rights and the monitoring of health care. Therefore, anthropological knowledge and the anthropologist's expertise should be used in advocacy on behalf of the suffering population in promoting meaningful rehabilitation programs, inclusive notions of victimhood, and in reinforcing the need for independent and continual medical assessment of the population impacted by the disaster.

Returning to the ideas outlined at the beginning of this chapter, my argument that the disaster is a processual event is substantiated by new facts that arise when I was analyzing my data. In 2001, a research team from the Universidade Federal Fluminese (Fluminence Federal University)[207] found two guava trees contaminated by cesium 147. Those trees were found in a junkyard that had taken over an older one that had been contaminated in 1987. Six individuals ate the fruit over the years. Fourteen years after the acknowledgment of the disaster, the everyday experiences of individuals continue to challenge the official assumption that "*everything is under control*" and expose the enduring conditions of social vulnerability.

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207 "Encontradas Goiabeiras contaminadas por Césio 137 em Goiânia". Newspaper *A Folha de São Paulo*, 06/01/2001; "Seis Comeram Goiabas com Césio", Newspaper *O Popular*, 06/07/2001.

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Based on my long-term research with the disaster's survivors and the perception I have from fieldwork, my evaluation is that the situation of the official victims of the disaster and that of the "césio policemen" will not change. After the dismantling of the Associação das Vítimas do Césio- 137 and the death of the vice-president of the Associação de Cabos e Soldados, the struggle for health care monitoring programs such as an increase in pensions as well as financial compensation are demands no longer made in the name of groups, but requests undertaken by isolated individuals. The policemen as individuals are looking for what they believe are their legal rights, going to court for their recognition as disaster victims. In 2001, the Goiás Government changed the administrative status of the FUNLEIDE turning it into a small section of the Secretariat of Health, named from that date on as Superintendência, SULEIDE (Superintendência Leide das Neves). This measure brought about budget cuts and more dependence by FUNLEIDE on the Secretariat. In 2002, the Brazilian Ministry of Health criticized the way the FUNLEIDE had handle the health care program established for the official victims. The press noted that an interdisciplinary team, from the national level, would be sent to the SULEIDE in order to evaluate and present an alternative program. To my knowledge this did not happen. I believe that any changes to occur in the compensation program and on the behalf of the physical and mental health of the affected population requires a transformation in the political agenda of the local government. As I have been arguing in my dissertation, the official assumption of what it means to be a developed state, the notion of progress, the quest for national recognition of the political and economic roles of the Goiás Government and also the local understanding of what

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the meanings of environmental place entail in the silence about the catastrophic event and its aftermath. In terms of nuclear experts, the CNEN will not re-evaluate the actions carried out during the emergency phase of the disaster because its international recognition was based on the ways the data and the results have been already presented at international conferences and in published papers. As a consequence, any changes on the behalf of the survivors will require a transformation of the political agenda by local and national administrators. In the continued unfolding of the process of the disaster, I hope to contribute in the future on behalf of the affected population by disclosing my data, by presenting my anthropological understanding of the plurivocality of the disaster voices and by testifying in individual cases.

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REFERENCES CITED

ALCALAY, Glenn

1988 "The Ethnography of Destabilization: Pacific Islanders in the Nuclear Age." *Dialectic Anthropology* 13:243-251.

1991 "Nuclear Colonialism in the Pacific." In: *Women's Voices on the Pacific The International Pacific Policy Congress*, edited by Leonora Foerstel, 93-102. Washington: Mainsonneuve Press.

1992 "Pax Americana in the Pacific." *CovertAction.* Number 40. Spring: 47-51.

1993 "Radiation and Indigenous Populations: The Marshall Island Case". Paper presented for the *Children Radiation Conference.* The Norwegian Center for Child Research. Trondheim, Norway. June 10 -14.

1995 Statement of Glenn H. Alcalay before the Presidential Advisory Committee on Human Radiation Experiments. March 15, 1995. Washington, D.C.

ALMEIDA, Miguel Vale de

1995 *Senhores de Si: Uma Interpretação Antropológica da Masculinidade.* Lisboa: Fim de Século Edições Ltda.

1996 "Género, Masculinidade e Poder: Revendo um Caso do Sul de Portugal". *Anuário Antropológico/95.* Rio de Janeiro: Tempo Brasileiro. Pp. 161-189.

ALVARES, Geraldo Teixeira

1942 *Luta na Epopéia de Goiânia: Uma Obra da Engenharia Nacional.* São Paulo: Associação Paulista de Imprensa.

ANDERSON, Benedict

1983 *Imagined Communities: Reflections on the Origin and Spread of Nationalism.* London: New Left Books and Verso.

ASSEMBLÉIA LEGISLATIVA DO ESTADO DE GOIÁS

1997 Minute of the Debate Forum: *Efeitos do Césio -137 ao Meio Ambiente e a Pessoa Humana.* Goiânia. May 7, 1997.

ASSIS, Machado

1974 [1873] "A Parasita Azul". *Histórias da Meia-Noite.* In:___ *Obra Completa,* Organized by Afrânio Coutinho. Vol. II. Pp. II-161 - II- 191. Rio de Janeiro: Companhia José Aguilar Editora.

ASSOCIAÇÃO DAS VÍTIMAS DO CÉSIO-137

1989 *Histórico da Luta da Comunidade Atingida pelo Acidente com o Césio 137 em Goiânia.* June/89.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

BARKER, Holly M.
1997 "Fighting Back: Justice, the Marshall Islands, and Neglected Radiation Communities. " In: ___ *Life and Death Matters: Human Rights and the Environment at the end of the Millennium*, edited by Barbara Rose Johnston, 290 - 306. Walnut Creek, California: Altamira Press.

BAKHTIN, M.
1981 "Discourse in the Novel." In ___ *The Dialogical Imagination*, edited by Michael Holquist, 259 - 442. Austin, Tex.: University of Texas Press.

BARTHES, R.
1967 *Système de la Mode.* Paris: Seuil.

BATTEAU, A.
2000 "A Century of Industrial Disasters". Unpublished paper presented at the symposia *Culture, Communication and the Making of Industrial Society*, during the Inter Congress hold at Beijing on the theme of *Metropolitan Ethnic Culture: Maintenance and Interaction.*

BEAN, S. S.
1989 "Gandhi and Khadi, the Fabric of Indian Independence". In ___ *Cloth and Human Experience,* edited by Annette B. Weiner and Jane Schneider. 355 - 376. Washington and London: Smithsonian Institution Press.

BECK, Ulrich
1987 "The Anthropological Shock: Chernobyl and the Contours of the Risk Society". *Berkeley Journal of Sociology.* 32:153-165.

BEHLER, G. T., Jr.
1986 "The Nuclear Accident at Three Mile Island: Its Effects on a Local Community." *Historical and Comparative Disaster Series.* Nº 7. Disaster Research Center. Delaware: University of Delaware.

BENTO, Maria Aparecida
1996 "Raça e Trabalho Insalúbre". *Parabólicas.* São Paulo: ISA. Nº 23. Year 3. October: 7.

BERTELL, Rosalie
1985 *"No Immediate Danger?: Prognosis for a Radioactive Earth.* Summertown,Tennessee: Book Publishing Company.

BIRMAN, Joel
1997 "A Clínica, entre Saber e Poder". *PHYSIS: Revista de Saúde Coletiva.* Rio de Janeiro: UERJ/IMS. Vol.7; Nº 1: 7-11.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

BLAIKIE, P. at al.
1994 *At Risk: Natural Hazards, People's Vulnerability and Disasters.* London: Routledge.

BOLIN, R., and P. Bolton
1986 *Race, Religion , and Ethnicity in Disaster Recovery.* Monograph # 42. Boulder: Institute of Behavioral Science, University of Colorado.

BOLIN, R., and L. Stanford
1991 "Shelter, Housing, and Recovery: A Comparison of U.S. Disasters." *Disasters* 45 (1): 25-34.

BRANDÃO, Carlos Rodrigues
1981 *Plantar, Colher, Comer: Um Estudo Sobre o Campesinato Goiano.* Rio de Janeiro: Edições Graal Ltda.

BRANDÃO-MELLO, C. E.
1991 "Personal Insights on the Goiânia Radiation Accident". *Health Physics.* 60 (1):3-4.

BRANDÃO-MELLO, C. E. At al.,
1991 "The Psychological Effects of the Goiânia Radiation Accident on the Hospitalized Victims". In ___ *The Medical Basis for Radiation-Accident Preparedness III (The Psychological Perspectives)*, edited by Robert C. Ricks, Mary E. Berger and Frederick M. O'H, Jr, 121-129. New York: Elsevier Science Publishing Company, Inc.

BUTTON, Gregory V.
1999 "The Negation of Disaster: The Media Response to Oil Spills in Great Britain." In: ___ *The Angry Earth*, edited by Anthony Oliver-Smith and Suzanna Hoffmann. 113 - 132. New York: Routledge.

CALVINO, Ítalo
1974 *Invisible Cities.* Translated from the Italian by William Weaver. New York and London: Harcourt Brace Jovanovich.

CÂMARA DOS DEPUTADOS
1997 *Redação Final da Audiência Pública Nº 0604/97, da Comissão de Seguridade Social e Família.* Departamento de Taquigrafia, Revisão e Redação. Brasília - D.F. August 21, 1997.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CAMPOS, Francisco Itami

1980 "Mudança da Capital: Uma Estratégia de Poder". *Cadernos do Indur-Estudos Urbanos e Regionais.* Goiânia: Fundação Instituto de Desenvolvimento Urbano e Regional. (2): 29 - 39, November.

1996 Saúde Pública: A Medicina e a Política". *Revista de Patologia Tropical.* Goiânia. Instituto de Patologia Tropical. Universidade Federal de Goiás. 25 (2): 173 - 186, July – December 1996.

1998 "Goiás, Formas de Ocupação: " ... Uma População sem Terra, Numa Terra Despovoada..." *Sociedade e Cultura* - Revista Ciências Sociais. Goiânia: Universidade Federal de Goiás. 1 (1): 71-80, January – June 1998.

1999 "Serviço de Higiene, Origem da Saúde Pública em Goiás". In: ___ *Saúde e Doenças em Goiás: A Medicina Possível - Uma Contribuição para a História da Medicina em Goiás,* edited by Lena Castello Branco Ferreira de Freitas. 223 - 238. Goiânia: Editora da Universidade Federal de Goiás.

CANDIDO, A.

1982 *Os Parceiros do Rio Bonito.* São Paulo: Livraria Duas Cidades.

CARVALHO, A. B.

1991 "The Psychological Effects of the Goiânia Radiological Accident on the Emergency Responder". In ___ *The Medical Basis for Radiation-Accident Preparedness III (The Psychological Perspectives),* edited by Robert C. Ricks, Mary E. Berger and Frederick M. O'H, Jr, 131- 141. New York: Elsevier Science Publishing Company, Inc.

CASTRO, Celso

1990 *O Espírito Militar: Um Estudo de Antropologia Social na Academia Militar das Agulhas Negras.* Rio de Janeiro: Jorge Zahar Editor.

CAUFIELD, Catherine

1990 [1989] *Multiple Exposures: Chronicles of the Radiation Age.* Chicago: The University of Chicago Press.

CHURCHILL, W. And W. La Duke

1985 "Radioactive Colonization and Native Americans." *Socialist Review* 81: 95-119.

CIÊNCIA HOJE

1988 *Autos de Goiânia.* Suplemento Vol. 7 Nº 40. SBPC.

CIÊNCIA HOJE

1997 *A Fiscalização Hoje.* Interview with José Mauro Esteves dos Santos. Rio de Janeiro: Sociedade Brasileira para o Progresso da Ciência. 22(131):57, September.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CLARK, Claudia
1987 "Physicians, Reformers and Occupational Disease: The Discovery of Radium Poisoning. *Women and Health* 12 (2): 147-167.

CLIFFORD, J.
1983 Ethnographic Authority." *Representations* . 1:2. Spring: 118-146.
1986 "Introduction: Partial Truths." In ___ *Writing Culture: The Poetics and Politics of Ethnography*, edited by James Clifford and George E. Marcus, 1 - 26. Berkeley: University of California Press.

CNEN - COMISSÃO NACIONAL DE ENERGIA NUCLEAR
1987 *Relatórios das Várias Frentes de Trabalho na Descontaminação no Acidente com o Césio 137 em Goiânia.*
1988 *Diretrizes Básicas de Radioproteção.* Rio de Janeiro: CNEN. DNE-32. July.

CNEN / DIGOI - COMISSÃO NACIONAL DE ENERGIA NUCLEAR / DISTRITO DE GOIÂNIA
1995 *Coletânea de Artigos sobre "Energia Nuclear".* Published at *Almanaque.* Children Section. Newspaper *O Popular.*

COELHO, Gustavo Neiva
1997 "Goiás: A Ocupação pela Agropecuária". *História Revista* - Revista do Departamento de História. Goiânia: Universidade Federal de Goiás. 2 (2): 23 - 51, July - December.

COMAROFF, Jean
1982 "Medicine: Symbol and Ideology". In: ___ *The Problem of Medical Knowledge: Examining the Social Construction of Medicine,* edited by Peter Wright and Andrew Treacher, 49-68. Edinburg: University of Edinburg Press.
1985 *Body of Power, Spirit of Resistance: The Culture and History of a South African People.* Chicago: The University of Chicago Press.

COMAROFF, Jean and S. Roberts
1981 *Rules and Processes.* Chicago: University of Chicago Press.

CONNERTON, Paul
1996 [1989] *How Societies Remember.* Cambridge: Cambridge University Press.

CONSTITUIÇÃO DA REPÚBLICA FEDERATIVA DO BRASIL
1988 *Enciclopédia Barsa.* Vol. 4. Pp. 328 - 357. 1995. Rio de Janeiro / São Paulo: Encyclopaedia Britannica do Brasil Publicações Ltda.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

CRESSON, G.
1991 "La Santé, Production Invisible des Femmes". *Recherches Féministes/Femmes, Savoir, Santé.* Vol. 4. N° 1.

CROFT, J. R. et al.
1988 *International Review of the Goiânia Radiological Emergency: Summary Report.* Mimeo.

CURADO, Maria Paula and Darlene da Silva
1990 *Histórico do Acidente Radioativo com Césio-137.* Goiânia: Fundação Leide das Neves Ferreira /CNPq.

DA MATTA, Roberto
1981 Trabalho de Campo". In: ___ *Relativizando - Uma Introdução à Antropologia Social.* Pp. 143 -173. Petrópolis: Vozes,
1983 [1978]"Você Sabe com Quem Está Falando? Um Ensaio sobre a Distinção entre Indivíduo e Pessoa no Brasil". In: ___ *Carnavais, Malandros e Heróis.* Pp. 139 - 193. Rio de Janeiro: Zahar Editores.

DANCY, D.J.
1989 "The Goiânia Accident". *Atom.* (388) 15-16.

DA SILVA, Telma C.
1997 "Biomedical Discourses and Health Care Experiences." In: ___ *The Medical Anthropologies in Brazil,* edited by Annette Leibing, 67 -79. Curare 12. Berlim: VWB.
1998a "Soldado é Superior ao Tempo": Da Ordem Militar à Experiência do Corpo como Locus de Resistência." *Horizontes Antropológicos.* Special issue: Corpo, Saúde e Doença, edited by Ondina Fachel Leal. Porto Alegre: PPGAS. 4 (9): 119 - 143.
1998b "Política de Memória: Recompondo as Lembranças no Caso do Desastre Radiológico de Goiânia." In: ___ *Memória,* edited by Carmelita B. De Freitas, 117 -138. Goiânia: Universidade Católica de Goiás.
2001 "Bodily Memory and the Politics of Remembrance: The Aftermath of Goiânia Radiological Disaster". *High Plains Applied Anthropologist.* Special Issue: Understanding Disasters and Catastrophes: An Anthropological Perspective. Colorado.Vol. 21 (1) Spring: 40 - 52.

DAS, V.
1998 [1995] "Suffering, Legitimacy and Healing: The Bhopal Case." In: ___*Critical Events: An Anthropological Perspective on Contemporary India.* Pp. 137 - 174. Delhi: Oxford University Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

DAWSON, Susan E. and Gary E. Madsen
1993 "The Perceived Health and Environmental Impacts of Working and Living in a Radioactive Environment: The American Indian Uranium Milling Experience." Paper presented at the American Anthropological Association Conference. Washington, D.C. Unpublished.

DEMERATH, Nicholas J. and Anthony F.C. Wallace
1957 "Introduction". *Human Adaptation to Disaster.* Special Issue edited by Nicholas J. Demerath and Anthony F. C. Wallace. 16 (2):1-2.

DIÁRIO OFICIAL - Nº 15.819 - October 10, 1989
1989 Law N° 10,977 from October 03, 1989.

DIÁRIO OFICIAL - Nº 250 - December 26, 1996
1996 Law N°, 9,425 from December 24, 1996.

DUARTE, Luiz Fernando Dias
1986 "A Construção Social da Pessoa Moderna". In ___ *Da Vida Nervosa nas Classes Trabalhadoras Urbanas.* Pp. 35-58. Rio de Janeiro: Jorge Zahar Ed.

DOUGLAS, Mary
1980 [1966] *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo.* London: Routledge & Kegan Paul.

DUMONT, Louis
1997 [1967] *Homo Hierarchicus: O Sistema de Castas e suas Implicações.* Tradução de Carlos Alberto Fonseca. São Paulo: Editora da Universidade de São Paulo.
1970 *Homo Hierarchicus: An Essay on the Caste System.* Translated by Mark Sainsbury. Chicago: The University of Chicago Press.

DURHAN, Eunice R.
1978 *A Caminho da Cidade.* São Paulo: Perspectiva.

DURKHEIM, Emile
1979 [1912] *Les Formes Élémentaires de la Vie Religieuse: Le Système Totémique en Australie.* Paris: Presses Universitaires de France.

ECONOMIA & DESENVOLVIMENTO
2000 "No Caminho da Competitividade". *Economia & Desenvolvimento.* Goiânia: Governo de Goiás, Secretaria do Planejamento e Desenvolvimento. I (2): 4 -7. January - March.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

ELIAS, Norbert

1994 [1939] *O Processo Civilizador.* Vol. I: Uma História dos Costumes, Translated by Ruy Jungmann. Rio de Janeiro: Jorge Zahar Editor.

1978 *The Civilizing Process.* Translated by Edmund Jephcott. New York: Urizen Books.

ENARSON, E., and B. Morrow (editors)

1998 *The Gendered Terrain of Disaster: Through the Women's Eyes.* Westport, CT: Greenwood.

ERIKSON, Kai T.

1976 *Everything in its Paths: Destruction of Community in the Buffalo Creek Flood.* New York: Simon and Schuster.

FERRAZ, Epaminondas S. B.

1988 "A Contaminação do Ambiente". *Autos de Goiânia* - Ciência Hoje, Sociedade Brasileira para o Progresso da Ciência - SBPC, Suplemento 7 (40): 29 - 32. SBPC.

FORD, Daniel

1982 *Three Mile Island: Thirty Minutes to Meltdown.* New York: Penguin Books.

FOUCAULT, Michel

1980 [1972]*Power / Knowledge: Selected Interviews & Other Writings 1972 – 1977,* translated by Colin Gordon, Leo Marshall, John Mephan, and Kate Soper and edited by Colin Gordon. New York: Pantheon Books.

1986 [1979] "O Nascimento do Hospital"; "Poder-Corpo". In:____ *Microfísica do Poder,* translated and edited by Roberto Machado. Pp.: 99-111; 145-152. Rio de Janeiro. Edições Graal.

1989 Film and Popular Memory". In: ___ *Foucault Live (Interviews, 1966 – 84),* translated by John Johnston and edited by Sylvère Lotringer. Pp. 89 - 106. New York: Semiotext (e).

FREITAS, Lena Castello Branco Ferreira de

1999 Privilegiado de Saúde". In: ___ *Saúde e Doenças em Goiás: A Medicina Possível - Uma Contribuição para a História da Medicina em Goiás,* edited by Lena Castello Branco Ferreira de Freitas. Pp. 239 - 289. Goiânia: Editora da Universidade Federal de Goiás.

FUNDAÇÃO LEIDE DAS NEVES

1987 *Listagem Oficial do Grupo III (519 Pacientes)*

1988a *Report of Activities - Dossier.* Medical Nucleus. Goiânia: FUNLEIDE.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

1988b *Acidente Radioativo de Goiânia - Relatório de Atividades.* Goiânia: FUNLEIDE. July.
1988 *Information Bulletin.* Goiânia: FUNLEIDE. 1 (1).
1990 *Lições do Acidente com o Césio-137 em Goiânia.* Goiânia: FUNLEIDE.

FUSTIER, P.
1991 "A Infra-Estrutura Imaginária das Instituições". In: ___ *A Instituição e as Instituições.* Edited by R. Kaés. São Paulo: Casa do Psicólogo.

GALLAGHER, Carole
1993 *Amerian Ground Zero: The Secret Nuclear War.* New Yok: Random House.

GARB, Paula
1994 "Sociocultural Responses to Radiation Contamination in Russia and Some Comparisons with the United States." Paper presented at the American Anthropological Association Annual Meeting. November 30 to December 04. Atlanta. Invited session. Human Rights and the Environment: Crisis, Response, and Responsibility.
1997 Complex Problems and No Clear Solutions: Radiation Victimization in Russia". In: ___ *Life and Death Matters: Human Rights and the Environment at the end of the Millennium*, edited by Barbara Rose Johnston, 307 - 329. Walnut Creek, California: Altamira Press.

GARCIA, O. at. al.
1997 "Evaluaciones Dosimetricas Y Biomedicas en el Programa Cubano con Niños de Areas Afectadas por el Accidente de Chernobil." Paper presented at the international conference: *Goiânia: 10 Anos Depois.* Goiânia October, 26-31. (Manuscript)

GEERTZ, Clifford
1973 *The Interpretation of Cultures.* Basic Books.

GOLDMAN, Márcio
1999 "Uma Categoria do Pensamento Antropológico: A Noção de Pessoa". In: ___ *Alguma Antropologia.* Pp. 21-37. Rio de Janeiro: Relume Dumará.

GOOD, B. J.
1994 *Medicine, Rationality, and Experience: An Anthropological Perspective.* Cambridge: Cambridge University Press.

GOULD, Peter
1990 *Fire in the Rain: The Democratic Consequences of Chernobyl.* Baltimore: The Johns Hopkins University Press.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

GRAHAM, H.
1984 *Women, Health and the Family.* Wheatsheafs Books Harvester Press.

GREENHALGH, Laura
1996 "Goiânia - 137". *Atenção.* Ano 2 (9) 10-16.

GUSTERSON, H.
1996 *Testing Times: A Nuclear Weapons Laboratory at the End of the Cold War.(?)*

HALBWACHS, M.
1976 [1925] *Les Cadres Sociaux de la Mémoire.* Paris: Mouton.

HARVEY, D.
1989 [1985] *The Urban Experience.* Baltimore: The Johns Hopkins University Press.

HEWITT, K. (Editor)
1983 *Interpretations of Calamity from the Perspective of Human Ecology.* London: Allen and Unwin.

HOFFMAN, Susanna M.,
1999 "The Regenesis of Traditional Gender Patterns in the Wake of Disaster". In:___ *The Angry Earth: Disaster in Anthropological Perspective,* edited by Anthony Oliver-Smith and Susanna M. Hoffman. Pp. 173-191. New York and London: Routledge.

HOLSTON, James
1989 *The Modernist City: An Anthropological Critique of Brasília.* Chicago and London: The University of Chicago Press.

HUMAN ORGANIZATION
1957 *Human Adaptation to Disaster.* Special Issue, edited by Nicholas J. Demerath and Anthony F. C. Wallace. 16 (2).

IAEA - INTERNATIONAL ATOMIC ENERGY AGENCY
1989 *Radiological Accident in Goiânia.* Vienna:IAEA.
1991 "The International Nuclear Event Scale for Prompt Communication of Safety Significance". In ___ INIS _ *Subject Categories and Scope Descriptions.* Appendix 2.Vienna: IAEA.

IBGE - INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA
1958 *Enciclopédia dos Municipios Brasileiros.* Vol. 36. Rio de Janeiro: IBGE.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

IBRACE - Instituto Brasil Central
1993 *II Dossiê: Radioatividade - Césio 137*.Goiânia.

IZUMINO, Eduardo A.
1997 *"Acidentes" Tecnológicos e Modernização Reflexiva: O Caso do Acidente de Goiânia*. Master Thesis. São Paulo: USP. Unpublished / Manuscript.

KAPLAN, Louise
1992 *A Slow Motion Emergency: Radiation Health Effects and Hanford.* Brandies: Brandeis University. PhD Dissertation. Unpublished.

KIMMEL, Michael S.
1998 "A Produção Simultânea de Masculidades Hegemônicas e Subalternas". *Horizontes Antropológicos*. Porto Alegre: UFRGS. IFCH. Programa de Pós-Graduação em Antropologia Social. Ano 4.N°.9: 103-117.

KLEINMAN, A.
1988 *The Illness Narratives: Suffering, Healing & the Human Condition.* U.S.: Basic Books.
1994 "Pain and Resistance: The Delegitimation and Relegitimation of Local Worlds." In:___ *Pain as Human Experience: An Anthropological Perspective*, edited by Mary-Jo Delvecchio Good, Paul E. Brodwin, Byron J. Good and Arthur Kleinman. Pp. 169-197. Berkeley: University of California Press.
1995 *Writing at the Margin: Discourse Between Anthropology and Medicine.* Berkeley: University of California Press.

KLEINMAN, A. at. al.
1997 *Social Suffering*. Berkeley: University of California Press.

KNAUTH, Daniela Riva at al.
1998 "A Banalização da AIDS". *Horizontes Antropológicos*. Special issue: Corpo, Saúde e Doença, edited by Ondina Fachel Leal. Porto Alegre: PPGAS. 4 (9): 171 - 202.

LEINER, Piero de Camargo
1995 Meia-Volta, Volver: Um Estudo Antropológico Sobre a Hierarquia Militar. Master Thesis. São Paulo: USP. Manuscript.

LEVINE, A. G.
1982 *Love Canal: Science, Politics and People.* Lexington and Toronto: Lexington Books.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

LIFTON, Robert Jay
1967 *Death in Life: Survivors of Hiroshima.* New York: Random House.

LINDENBAUM, Shirley and Margaret Lock
1993 Preface". In: *Knowledge, Power and Practice: The Anthropology of Medicine and Everyday Life*, edited by Shirley Lindenbaum and Margaret Lock. Pp. IX-XV. Berkeley: University of California Press.

LOCHARD, J
1996 "Psychological and Social Impacts of Post-Accident Situations: Lessons from the Chernobyl Accident". *International Congress on Radiation Protection -IRPA9*, Vienna, Austria, 14-19 April 1996.

LOCK, Margaret
1993 "The Politics of Mid-Life and Menopause: Ideologies for the Second Sex in North America and Japan. " In:___*Knowledge, Power and Practice: The Anthropology of Medicine and Everyday Life*, edited by Shirley Lindenbaum and Margaret Lock. Pp. 330- 363. Berkeley: University of California Press.
1994 *Displacing Suffering: The Reconstruction of Death in North America and Japan.* Paper prepared for a conference on Social Suffering, Bellagio. July 1994. Manuscript.

LORENZO, A. at. al.
1997 "La Experiencia del Programa Cubano con Niños de Territorios Afectados por Contaminación Radiactiva". Paper presented at the international conference: *Goiânia: 10 Anos Depois.* Goiânia October, 26-31. (Manuscript)

LOW, Setha M.
1988 "Housing, Organization, and Social Change: A Comparison of Programs for Urban Reconstruction in Guatemala. *Human Organization* 47 (1): 15 - 24.

LOYOLA, Maria Andréia
1979 "Medicina Popular". In: ___ *Saúde e Medicina no Brasil Contribuição para um Debate.* Edited by Reinaldo Guimarães. Pp. 225 - 237. Rio de Janeiro: Edições Graal Ltda.

LÜDTKE, A.
1993 "Coming to Terms with the Past: Illusions of Remembering, Ways of Forgetting Nazism in West Germany. *Journal of Modern History* 65, September: 542 - 572.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

MAC DONALD, Helen Bajorek

2001 "Poles During WWII and Its Aftermath: From Deportation & Exile in Soviet Labor Camps to Emplacement in Canadá". *High Plains Applied Anthropologist.* Special Issue: Understanding Disasters and Catastrophes: An Anthropological Perspective. Colorado.Vol. 21 (1) Spring: 62 - 89.

MACHADO, Paulo Affonso Leme

1987 "Prevenção do Dano Nuclear: Aspectos Jurídicos". *Revista de Informação Legislativa.* Brasília 24 (95). July/September: 335 - 354.

MALHEIROS, Tânia

1996 *Histórias Secretas do Brasil Nuclear.* Rio de Janeiro: WVA Editora e Distribuidora Ltda.

MARSHALL. Elio

1981 "Human Guinea Pigs at Oak Ridge?". *Science.* Vol. 213: 1093-1094. September 4, 1981.

MARX, Karl

1990 *Capital.* Translated by Ben Fowkes. London: Penguin Books.

MAUSS, Marcel

1966 *The Gift: Forms and Functions of Exchange in Archaic Societies.* Translated by Ian Cunnison. London: Cohen & West Ltda.

1983a [1950] "Les Techniques du Corps". In ___ *Sociologie et Anthropologie.* Pp. 363 - 386. Paris: Presse Universitaires de France. Essay originally published in 1936.

1983 [1938] "Une Catégorie de L'Esprit Humain: La Notion de Personne Celle de "Moi". In ___ *Sociologie et Anthropologie.* Pp. 331-362. Paris: Presse Universitaires de France.

1983b [1923-1924] "Essai Sur le Don: Forme et Raison de l'Échange dans les Sociétés Archaïques". In ___ *Sociologie et Anthropologie.* Pp. 144-279. Paris: Presse Universitaires de France.

MAYBURY-LEWIS, David

1984 [1974] "Wai'á". In: ___ *A Sociedade Xavante.* Pp. 321-335. Rio de Janeiro: Livraria Francisco Alves Editora S/A.

MENDONÇA, Anamélia H.

1988 *The Radiological Accident in Goiânia, Brasil - An Overview.* Rio de Janeiro: IRD/CNEN.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

MILLS, Megan S.
2001 "The 1942 Evacuation of Burma, The Memory of Disaster, and Refugee Resilience. *High Plains Applied Anthropologist.* Special Issue: Understanding Disasters and Catastrophes: An Anthropological Perspective. Colorado.Vol. 21 (1) Spring: 25 -39.

MINISTÉRIO DA JUSTIÇA / DEPARTAMENTO DE POLÍCIA FEDERAL
1987 *Inquérito Policial - Auto de Qualificação e Interrogatório.* SR / Go. Cartório. Page 25.

MOREYRA, Sérgio Paulo
1982 "À Sombra do Ouro". *Revista do ICHL.* Instituto de Ciências Humanas e Letras. Goiânia: Universidade Federal de Goiás. 2 (2): 261 - 269, July - December.

MORRIS, David B.
1997 "About Suffering: Voice, Genre, and Moral Community". In:___ *Social* 25- 45. Berkeley: University of California Press.

NAZARÉ, Rex
1987 Statement made at Departamento de Polícia Federal. Superintendência Regional em Goiás. Goiânia. Ministério da Justiça. October 28, 1987. Pages: 176-182.

NADEL, S.F.
1956 "Understanding Primitive People". *Oceania.* Nº 26: 159 - 173.

NAZARÉ, Rex
1988 *CPI do Césio.* Brasília. Senado Federal. March 3, 1988.

NASH, June and Max Kirsch
1986 "Polychlorinated Biphenyls in the Electrical Machinery Industry: An Ethnological Study of Community Action and Corporate Responsibility. *Social Science & Medicine.* 23 (2):131-138.
1988 "The Discourse of Medical Science in the Construction of Consensus Between Corporation and Community". *Medical Anthropology Quarterly* Vol. 2. Nº 2: 158-171.

NETO, Sebastião Benício da Costa
1994 *Fatores do Processo de Tomada de Decisão da Equipe de Saúde numa Instituição de Tratamento a Irradiados por Fonte Ionizante: Um Estudo de Caso.* Master Thesis. Psychology Institute. Brasília: Universidade de Brasília. (Manuscript)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

NORA, Pierre
1989 "Between Memory and History: *Les Lieux de Mémoire*". Translated by Marc Roudebush. *Representations* 26: 7 - 25. Spring.

OLIVEIRA, Alexandre Rodrigues de
1988 Relatório Preliminar Sobre o Acidente Radiológico de Goiânia". *Núcleos*. Área de Saúde. Divisão de Higiene das Radiações Ionizantes.

OLIVEIRA, Alexandre Rodrigues de at.al
1987 *Programa de Acompanhamento Médico às Vítimas do Acidente de Goiânia*. December.

OLIVEIRA, Alexandre Rodrigues de at.al
1991 "Medical and Related Aspects of the Goiânia Accident: An Overview". *Health Physics*: Special Issue: The Goiânia Radiation Accident. Oxford: Pergamon Press.Vl.60. N°1: 17 - 24.

OLIVEIRA, Alexandre Rodrigues de at.al.,
1994 "The Goiânia Radiological Accident". *Actualités Sur le Césium:* Journée Organisée par le Comité de Radioprotection d'Électricité de France. Paris, le 25 Mai 1993. EDF - Comité de Radioprotection. Mars 1994 - N° 8.

OLIVEIRA, Áttali Azeredo
1989 *O Acidente Radioativo de Goiânia: Suas Implicações Jurídico-Penais*. Paper presented at the Special undergraduate course on Penal Law. Goiânia: Law School. Universidade Federal de Goiás.

OLIVER-SMITH, A.
1990 "Post-Disaster Housing Reconstruction and Social Inequality: A Challenge to Policy and Practice. *Disasters* 14 (1): 7-19.
1991 "Successes and Failures in Post-Disaster Resettlement. *Disasters* 15 (1): 12-23.
1992 [1986] *The Martyred City*. Illinois: Waveland Press, Inc.
1996 "Anthropological Research on Hazards and Disasters". *Annual Review of Anthropology*. 25:303-328.
1999 "What is a Disaster?": Anthropological Perspectives on a Persistent Question". In: ___ *The Angry Earth*, edited by Anthony Oliver-Smith and Suzanna Hoffmann. 18-34. New York: Routledge.
1999 "Peru's Five-Hudred-Year Earthquake:Vulnerability in Historical Context". In: ___ *The Angry Earth*, edited by Anthony Oliver-Smith and Suzanna Hoffmann. 75-88. New York: Routledge.

OLIVER-SMITH, A. And Susanna M. Hoffman (editors)
1999 *Angry Earth*. New York: Routledge.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

2002 *Catastrophe and Culture.* School of American Research.

OTTO, A. C. at al.
1996 "Formação de Base em Energia Nuclear: A Experiência em Goiânia". Paper presented at the *VI Congresso Geral de Energia Nuclear.* Rio de Janeiro. October 10 to November 1th. (manuscript).

PAINE, Robert
1987 "Accidents, Ideologies and Routines: "Chernobyl" over Norway. *Anthropology Today* 3 (4): 7-10.
1989 "Making the Invisible "Visible": Coming to Terms with Chernobyl and its Experts, a Saami Illustration." *International Journal of Moral and Social Studies* 4 (2): 141 - 143.

PASCHOA, A. S. at. al.
1993 Revisiting Goiânia: Toward a Final Repository for Radioactive Waste". *IAEA Bulletin.* Vol. 35, Nº 1 (March): 28-31.

PEACOCK, W., B. Morrow, and H. Gladwin
1997 *Ethnicity, Gender, and the Political Ecology of Disasters: Hurricane Andrews and the Reshaping of a City.* New York: Routledge.

PEIRANO, Mariza
1999 A Alteridade em Contexto: A Antropologia Como Ciência Social no Brasil. *Série Antropologia.* Nº 255. Brasília: Universidade de Brasília.

PETTERSON, J. S.
1988 "Perception vs. Reality of Radiological Impact: The Goiânia Model". *Nuclear News.* La Grange Park: American Nuclear Society. November: 84-90.

POLÍCIA MILITAR DO ESTADO DE GOIÁS - BOLETIM INTERNO (BI)
1987 Newsletter Number 002/87 - From November 03 1987.

PREFEITURA MUNICIPAL DE GOIÂNIA
1993 *Memorial ao Acidente Radiológico de Goiânia - Césio 137.* Proposal and folder.

QUARANTELLI, E. L.
1991 "Disaster Research Center, University of Delaware". *Disasters* 15 (3): 274-277.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

QUESADA, Cécile
2001 "Men Facing Earthquakes: The Example of Rognes (Bouches-du-Rhône, France)." *High Plains Applied Anthropologist.* Special Issue: Understanding Disasters and Catastrophies: An Anthropological Perspective. Colorado.Vol. 21 (1) Spring: 53 - 61.

RAJAN, R.
1999 "Bhopal: Vulnerability, Routinization, and the Chronic Disaster." In __ *The Angry Earth*, edited by Anthony Oliver-Smith and Suzanna Hoffmann. 257 - 277. New York: Routledge.

RANGEL, Maria Lígia
1993 "Saúde do Trabalhador - Identidade dos Sujeitos e Representações dos Riscos a Saúde na Indústria Petroquímica". *Cadernos de Saúde Pública.* Vol. 9. Nº 3. July - September. Pp. 333 - 347.
1994 "Riscos e Saúde nos Locais de Trabalho". *PHYSIS: Revista de Saúde Coletiva.* Nº Especial: Gênero, Prática Médica e Saúde. Rio de Janeiro: UERJ/IMS. Vol. 4, nº 1: 133-144.

RAYNER, Jeannette
1957 "Annotated Bibliography on Disaster Research". *Human Adaptation to Disaster.* Special Issue, edited by Nicholas J. Demerath and Anthony F. C. Wallace. 16 (2):30-40.

ROBERTS, Leslie
1987 "Radiation Accident Grips Goiânia": *Science.* Vol. 238:1028-1031.

SAE - SECRETARIA DE ASSUNTOS ESTRATÉGICOS
1997 *Centro Regional de Ciências Nucleares do Centro-Oeste.* Folder. June, 1997.

SAHLINS, M.
1976 *Culture and Practical Reason.* Chicago: The University of Chicago.

SAINT-HILAIRE, Auguste de
1975 *Viagem à Província de Goiás,* translated by Regina Regis Junqueira. São Paulo: Editora da Universidade de São Paulo / Livraria Itatiaia Editora Ltda.

SALEM, Tania
1981 "Mulheres Faveladas: "Com a Venda nos Olhos". In: ___ Perspectivas Antropológicas da Mulher. Nº 1. Pp. 49 - 99. Rio de Janeiro: Zahar Editores.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

SANTOS, José Mauro Esteves dos (CNEN President)
1997 Speech delivered at the inauguration of the Centro Regional de Ciências Nucleares do Centro-Oeste. CNEN. Goiânia June 5, 1997.

SARTI, Cynthia Andersen
1996 *A Família como Espelho: Um Estudo sobre a Moral dos Pobres.* Campinas: Editora Autores Associados.

SCAVONE, L.
1993 *Família; Maternidade e Medicina: Quais Implicações?* Paper presented at the XIX Meeting of ANPOCS - Associação Nacional de Pós-Graduação em Ciências Sociais. Caxambu, MG, Brazil.
1996 *Família, Trabalho e Saúde: Invisibilidade das Doenças Profissionais Ligadas ao Amianto.* Paper presented at the panel Família e Sociedade. XX Meeting of ANPOCS - Associação Nacional de Pós-Graduação em Ciências Sociais. Caxambu, MG, Brazil. October 22-26.

SCHNEIDER, David
1957 "Thyphoons on Yap". *Human Organization* 16 (2): 10 -15.

SCHNEIDER, Keith
1993 "Foreword". In:___ *American Ground Zero: The Secret Nuclear War.* Carole Gallagher. Pp. XV-XIX. New York: Random House.

SILVA, Reijane Pinheiro
1998 *A Mulher no Universo Country: O Jeito Nelory de Ver.* Final paper presented at the *Curso de Especialização em Antropologia Social.* Goiânia: Museu Antropológico/ Departamento de Ciências Sociais. Universidade Federal de Goiás.

SILVA, Gláucia Oliveira da
1999 *Angra I e a Melancolia de Uma Era.* Niterói: Editora da Universidade Federal Fluminense.

SILVESTRE, Sulivan
1996 História do Acidente com o Césio-137". Newspaper *Diário da Manhã.* Goiânia. May 05, 1996.

SINGER, Merrill and Hans Baer
1995 "Studying Up: The Political Economy of Nuclear Regulation." In: ___ *Critical Medical Anthropology.* Pp.157-178. Amityville: Baywood Publishing Company, Inc.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.

SINGER, Paul
1976 [1961] "Agricultura e Desenvolvimento Econômico". In: ___*Vida Rural e Mudança Social.* Edited by Tamás Szmrecsányi and Oriowaldo Queda. Pp.132-147. São Paulo: Companhia Editora Nacional.

SOBREIRO ADVOGADOS ASSOCIADOS
1997 *Ação de Indenização C/C Reparação de Danos e Lucros Cessantes* – Marques de Souza Rodrigues.

SOUZA, D. M. B. de L. D.
1994 "UDR: Prática Política e Ideologia". *Ciências Humanas em Revista.* Revista do Instituto de Ciências Humans e Letras. Goiânia. Universidade Federal de Goiás. V.5. Nº1: 99-113.

STEIN, Howard F.
2001 "The Left Out and the Forgotten: Notes on the Eics and Emics of Disasters". *High Plains Applied Anthropologist.* Special Issue: Understanding Disasters and Catastrophes: An Anthropological Perspective. Colorado.Vol. 21 (1) Spring: 1- 21.

STEPHENS, Sharon
1987 Chernobyl Fallout: A Hard Rain for the Saami. *Cultural Survival Quarterly.* 11 (2): 66-71.
1995 "Physical and Cultural Reproduction in a Post-Chernobyl Norwegian Saami Community." In: ___ *Conceiving the New World Order: The Global Politics of Reproduction,* edited by Faye D. Ginsburg and Rayna Rapp, Pp. 270 - 287. Berkeley: University of California Press.

STRETHERN, M.
1988 *The Gender of the Gift.* Berkeley: University of California Press.

STURKEN, M.
1997 *Tangled Memories: the Vietnam War, the AIDS Epidemic, and the Politics of Remembering.* Berkeley: University of California Press.

SUSSER, Ida
1985 Union Carbide and the Community Surrounding It: The Case of a Community in Puerto Rico. *International Journal of Health Services.* Vol. 15 (4): 561-583.
1992 "Women as Political Actors in Rural Puerto Rico: Continuity and Change. In: ___ *Anthropology and the Global Factory: Studies of the New Industrialization in the Late Twentieth Century,* edited by Frances A. Rothstein and Michael Blim, Pp. 206 - 219. New York: Bergin & Garvey.

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TAUHATA, L and ALMEIDA, E.S.
1984 *Radiações Nucleares - Curso Programado.* Rio de Janeiro: Comissão Nacional de Energia Nuclear.

TAYLOR, Antony J.
1990 "A Pattern of Disasters and Victims". *Disasters* 14 (4): 291 - 300.

TAYLOR, G.
1996 *Cultural Selection. Why Some Achievements Survive the Test of Time – And Others Don't.* New York: Basic Books.

TRANJAN FILHO, A. and Paulo Ney P. Rabelo
1997 "Aceitação do Local e da Construção do Depósito Definitivo de Rejeito Radioativo de Abadia de Goiás (Uma Visão do Processo de Aceitação Pública e de Percepção de Risco)". Paper presented at the international conference: *Goiânia: 10 Anos Depois.* Goiânia October, 26-31. Manuscript.

TURNER, Victor
1974 *Dramas, Fields, and Metaphors: Symbolic Action in Human Society.* Ithaca: Cornell University Press.
1982 [1969] *The Ritual Process: Structure and Anti-Structure.* New York / Ithaca: Cornell University Press.

VALVERDE, Nelson José de Lima; Carlos Eduardo Brandão; Rosana Farina, José Ferreira Silva and José William de Oliveira
1997a *Nota Preliminar.* May 01.

VALVERDE, Nelson José de Lima; Carlos Eduardo Brandão; Rosana Farina, José Ferreira Silva e José William de Oliveira
1997b *Relatório de Avaliação Médica de Militares da Polícia Militar do Estado de Goiás.*

VELHO, Gilberto
1981 "Observando o Familiar". In: ___ *Individualismo e Cultura.* Pp. 121 – 132. Rio de Janeiro: Zahar.

VERANI, Cibele B.L.
1994 "A Construção Social da Doença e seus Determinantes Culturais: A *Doença da Reclusão* do Alto Xingu. In: ___ *Saúde e Povos Indígenas,* edited by Ricardo V. Santos and Carlos E.A. Coimbra Jr. Pp. 91 - 113. Rio de Janeiro: Fiocruz.

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VERNET, Daniel
1998 "Chroniques - International". *Le Monde.* Paris, November 13. (A review of the book: *La Supplication: Tchernobyl, Chroniques de Notre Monde Après l'Apocalypse.* Svetlana Alexievitch. Traduit du Russe par Galia Ackerman and Pierre Loraisn Paris: J.C. Lattès).

WEINER, A. B. and Jane Schneider eds.
1989 *Cloth and Human Experience.* Washington and London: Smithsonian Institution Press.

WOLF, Eric R.
1974 [1964] *Anthropology.* New York: W. W. Norton & Company. Inc.
1990 [1982] *Europe and the People Without History.* Berkeley: University of California Press.
1999 "Contested Concepts". In:___ *Envisioning Power: Ideologies of Dominance and Crisis.* Pp. 21 - 67. Berkeley: University of California Press.

YENGOYAN, Aram A.
2001 "Culture and Power in the Writings of Eric Wolf" (Foreword). In: ___ *Pathways of Power: Bulding an Anthropology of the Modern World.* E. R. Wolf with Sydel Silverman. Pp. vii - xvii. Berkeley: University of California Press.

YONEYAMA, Lisa
1993 *Hiroshima Narratives and the Politics of Memory.* Stanford: Stanford University. PhD Dissertation. Unpublished.

YOUNG, Allan
1982 "The Anthropologies of Illness and Sickness". *Annual Review of Anthropology* 11:257-285.
1993 Description of How Ideology Shapes Knowledge of a Mental Disorder (Posttraumatic Stress Disorder)". In:___ *Knowledge, Power and Practice: The Anthropology of Medicine and Everyday Life*, edited by Shirley Lindenbaum and Margaret Lock. Pp. 108-128. Berkeley: University of California Press.

ZAMAN, Mohammad Q.
1999 "Vulnerability, Disaster, and Survival in Bangladesh: Three Case Studies" In: ___ *The Angry Earth*, edited by Anthony Oliver-Smith and Suzanna Hoffmann. 192-212. New York: Routledge.

ZONABEND, Françoise
1993 [1989] *The Nuclear Peninsula.* Cambridge: Cambridge University Press.

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MEDIA NEWS CITED
(by chronological order)

-1987-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	12-20-87	*Cidade Enfim Livre do Césio*	Marcondes Franco Filho

Magazine	City	Date	Title	Author
SCIENCE 238 (4830): 1028-1031	Washington	11-20-87	*Radiation Accident Grips Goiânia*	Leslie Roberts

-1988-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	02-26-88	*Instalado o Órgão que Acompanhará Vitimas do Césio*	-
CORREIO BRAZILIENSE	Brasília	05-22-88	*Césio Deixa sete Bombeiros Impotentes*	Ana Dubeux
DIÁRIO DA MANHÃ	Goiânia	11-12-88	*Passeatas Agitam a Cidade*	

Magazine	City	Date	Title	Author
SCIENCE 239 (4838)	Washington	01-22-8	*Treatment of Radiation Victims in Brazil*	Robert P. Gale

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-1989-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	04-15-89	*Preocupada*	-
O POPULAR	Goiânia	07-13-89	*Itália se Propõe a Construir de Graça Depósito para Lixo*	-
O POPULAR	Goiânia	08-05-89	*Estado Insiste no Depósito de Lixo sem Ônus*	-

-1990-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	11-07-90	*Câmara Exige Acesso ao Depósito Radioativo*	-

-1992-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	08-02-92	*Vítimas do Césio*	Paulo Linhares
A FOLHA DE SÃO PAULO	São Paulo	08-06-92	*Juiz Condena Médicos no Caso do Césio*	-

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-1993-

Newspaper	City	Date	Title	Author
NEW YORK TIMES	New York	12-16-93	*Trying to Build Secret Weapons, U.S. Spread Radiation in 1950's*	Keith Schneider
NEW YORK TIMES	New York	12-17-93	*Secret Nuclear Research on People Comes to Light*	Keith Schneider
NEW YORK TIMES	New York	12-29-93	*Energy Official Seeks to Assist Victims of Tests*	Keith Schneider
NEW YORK TIMES	New York	12-30-93	*Inquiry Into Radiation Tests Extends to Veterans*	Matthew L. Wald

-1994 -

Newspaper	City	Date	Title	Author
NEW YORK TIMES	New York	01-01-94	*In Debate on Radiation Tests, Rush to Judgment is Resisted*	Gina Kolata
NEW YORK TIMES	New York	01-09-94	*Government Guinea Pigs*	David J. Rothman
O POPULAR	Goiânia	05-15-94	*Morre de Cancêr mais uma Vitima do Césio 137*	-
O POPULAR	Goiânia	05-29-94	*Morre outra Vitima do Césio, a 3ª este mês*	-

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-1995-

Newspaper	City	Date	Title	Author
THE NEW YORK TIMES	New York	05-03-95	*Tourist Site Springs From a Nuclear Horror Story*	James Brooke
THE NEW YORK TIMES	New York	10-03-95	*Panel Urges U.S. To Apologize for Radiation Testing and Pay Damages*	Philip J. Hilts

-1996-

Newspaper	City	Date	Title	Author
DIÁRIO DA MANHÃ	Goiânia	03-29-96	*Pareja dá as Ordens*	-
O POPULAR	Goiânia	03-31-96	*Primeiros Reféns Deixam Cepaigo*	-
A FOLHA DE SÃO PAULO	São Paulo	04-04-96	*Presos Fogem com 6 Reféns após 151 horas*	-
O POPULAR	Goiânia	05-04-96	*Grupo faz Manifestação em prol de Condenados do Césio*	-
DIÁRIO DA MANHÃ	Goiânia	05-05-96	*A História do Acidente com o césio-137*	Sulivan Silvestre
FOLHA DE SÃO PAULO	São Paulo	12-26-96	*Oposição aponta "pretensão"*	LauroVeiga Filho

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-1997-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	01-06-97	*Ecologicamente Correta?*	Henrique Duarte
O POPULAR	Goiânia	01-19-97	*Lixo do Césio será Sepultado*	Marília Assunção
DIÁRIO DA MANHÃ	Goiânia	03-05-97	*Césio: PM Denuncia Contaminção*	Gêza Maria
DIÁRIO DA MANHÃ	Goiânia	03/08-97	*Médico Confirma Denúncias*	Gêza Maria
DIÁRIO DA MANHÃ	Goiânia	03-19-97	*Policiais vão à Justiça*	Renatha Melo
DIÁRIO DA MANHÃ	Goiânia	03-20-97	*CNEN Nega Denúncia*	Gêza Maria
O POPULAR	Goiânia	03-20-97	*Suposta Contaminação de PM s será Apurada*	Carla Borges
O POPULAR	Goiânia	03-21-97	*Vigilantes do Césio Querem ser Examinados por Comissão*	-
O POPULAR	Goiânia	03-23-97	*FUNLEIDE Examinará Pm s*	Carla Borges
O POPULAR	Goiânia	04-19-97	*CNEN Convoca Médicos para examinar Policais Militares*	Carla Borges
OPÇÃO	Goiânia	04-20/26-97	*Choque de Versões*	Clarissa Bezerra
O POPULAR	Goiânia	04-28-97	*Médicos Começam a Examinar Hoje PM s Supostamente Contaminados pelo Césio*	-
O POPULAR	Goiânia	04-29-97	*Médicos Vão Calcular Radiaçã o para Averiguar Suspeita de PM s*	-
DIÁRIO DA MANHÃ	Goiânia	04-29-97	*Sentinelas do Césio Fazem Exame*	Noêmia Félix
VEJA	R.J.	04-30-97	*Tragédia Sem Fim*	Gerson Camarotti
O POPULAR	Goiânia	05-03-97	*Para CNEN, Males são Ocupacionais*	-

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-1997-

Newspaper	City	Date	Title	Author
OPÇÃO	Goiânia	05-04/10-97	*Avaliação Supersônica*	Clarissa Bezerra
O POPULAR	Goiânia	05-05-97	*Descontaminando Goiânia das Lembranças do Césio 137*	Telma Camargo da Silva
OPÇÃO	Goiânia	05-11/17-97	*Crônica de Uma Dor Anunciada*	Clarissa Bezerra
O POPULAR	Goiânia	06-01-97	*Brasil é Referência em Tecnologia Nuclear*	Márcio Fernandes
O POPULAR	Goiânia	06-05-97	*Goiânia ensinou o Mundo a Conviver com a Energia Nuclear*	Interview with José J. Rosenthal made by Márcio Fernandes
O POPULAR	Goiânia	06-06-97	*Parque de Abadia masce sobre o Césio*	Rosane Rodrigues da Cunha
O POPULAR	Goiânia	06-27-97	*Sai Logo o Laudo sobre PMs*	-
A FOLHA DE SÃO PAULO	S.P.	07-06-97	*Baderna Policial e Mudança*	Paulo Sérgio Pinheiro
DIÁRIO DA MANHÃ	Goiânia	07-07-97	*Arsenal de Remédios: Triste Herança do Césio*	Rejane Braz
O POPULAR	Goiânia	08-15-97	*O que eu Tenho, Doutor?*	Silvana Bittencourt
O POPULAR	Goiânia	08-22-97	*Laudo Diz que Pm's Sofrem Estresse*	Sócrates Arantes
O POPULAR	Goiânia	09-21-97	*PM's de Goiás são Vítimas do Césio*	Aldo Arantes/ Jandira Feghali
O POPULAR	Goiânia	09-28-97	*Tragédia e Pânico na Vida de Goiás*	Henrique Santillo

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-1999-

Newspaper	City	Date	Title	Author
O POPULAR	Goiânia	03-13-99	*Responsáveis pelo Césio 137 Ganham Liberdade*	-

-2000-

Eletronic Mail	City	Date	Title	Author
JC E-Mail Number 1,580 (Jornal da Ciência) <jciencia@domain.com.br>.	R. de J.	07/11/2000	*Físico Anselmo Pessoa Reclama Soluções para Tratamento dos Rejeitos Radioativos no Brasil*	Flamínio Araripe

-2001-

Newspaper	City	Date	Title	Author
A FOLHA DE SÃO PAULO	São Paulo	06/01/01	*Encontradas Goiabèiras contaminadas por Césio 137 em Goiânia*	-
O POPULAR	Goiânia	06/07/01	*Seis Comeram Goiabas com Césio*	-

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LIST OF INTERVIEWEES

1. Agostinho Pontenciano de Sousa
2. Alexandre Rodrigues de Oliveira
3. Alfredo Tranjan Filho
4. Ana Bandeira de carvalho
5. André Ervilha
6. Aparecida Caetano Pinto Coelho
7. Carla Roberto Sartin
8. Carlos de Figueiredo Bezeril
9. Carlos Santana Lira
10. Ceres Regina Dias Fernandes
11. Coraci Pereira da Silva
12. Dalva Felizardo Fabiano
13. Delmar Rosa Mota de Deus
14. Divino Fabiano
15. Edmilson de Sousa Lima
16. Edson Fabiano
17. Eliana Ferreira Costa
18. Elionnora Delwing Koff
19. Emanuel Barbosa da Silva
20. Ernesto Fabiano
21. Everaldo Antonio Pastore
22. Gaspar Alves da Silva
23. Gastão de Oliveira
24. Geny de Oliveria
25. Geraldo Luis de Deus
26. Geraldo Guilherme
27. Gislane Braga Rodrigues
28. Harlem Inácio dos Santos
29. Henrique Santillo
30. Irene Roberto Sartin
31. Imar Crisógno Fernandes

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32.Ismália Aparecida Sartin
33.Jadyr Alves de Andrade
34.Joaquim Saraiva
35.João Luiz Roberto Sartin
36.João Marques de Abreu
37.Joana Fomm
38.José Ferreira Silva
39.José de Júlio Rozental
40.José Luis Pires
41.José Walter Cotegibe Pélico
42.Juliene Marques Dias
43.Keila Carlos de Araújo Lira
44.Lenine Fenelon
45.Lindalva Chapadense
46.Luis Carlos da Costa e Silva
47.Luis Ládgero Pires
48.Lourdes Ferreira
49.Luiza Odete Mota dos Santos
50.Márcia Campos Prudente
51.Márcia Rocha do Carmo
52.Maria Aparecida Monteiro Gomes
53.Maria Márcia de Queiroz
54.Maria Erivan Bezerra Silva
55.Maria Paula Curado
56.Marques de Sousa Rodrigues
57.Míriam Aparecida Al Tomé Rezende
58.Myrna de Fátima Gontijo Neiva
59.Nivaldo de Deus
60.Osmar Pires M. Júnior
61.Paulo Cunha
62.Paulo Henrique
63.Paulo Ney Rabelo
64.Pedro Wilson Guimarães
65.Raquel Azeredo Souza

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66.Rosa Bento Gonçalves
67.Sebastião Benício da Costa Neto
68.Sebastião Vieira Cruvinel
69.Sílvia Regina Araujo Leal
70.Stepan Nercessian
71.Suzana Helou
72.Terezinha Fabiano
73.Valdi Camárcio
74.Valdi Martins da Silva
75.Vasco Martins Cardoso
76.Vera Aparecida Saddi
77.Victor da Cunha
78.Zenildo Barreto
79.Zoroastro Pereira da Silva Bueno
80.Walter Mendes Ferreira
81.Washington Luis R. Novaes

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