POSSESSIVE EXPRESSION AT WORK: "THOSE MACHINES ARE MINE"

by

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

2005

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Abstract

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Jessica Kindred

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Using the theoretical framework of Activity Theory, this research examined the context of work as a zone of activity with the potential for human development and for the formation of psychological ownership. Problematizing worker subjectivity in terms of alienation vs. cultivation, this study explores the notion of psychological ownership as an alternative to the alienation outcome and operationalizes this notion in terms of the Jamesian variable of possessive expression. I analyzed the verbal data of possessive expression in personal writing authored by managerial participants in a unique training workshop of Process Improvement in their gear manufacturing workplace. Possessive expression in workshop writing was analyzed both developmentally in terms of the changing of possessive pronouns across workshop activity sessions and ethnographically in terms of the sharedness and quality of the objects such pronouns were used to mark. Possessive pronouns my and our, as markers of identity and belonging, were measured in order to discover their development across the course of the multi-session workshop span, and job category and company tenure differences were considered ex post facto to explore their possible roles in the development of possessive expression. Objects of possessive expression were considered in terms of their level of description and their sharedness across writers as owned objects as well as for their ethnographic potential to depict the culture and activity of the workshop and potentially of the workplace.

Preface

For purposes of protection and confidentiality, no person's name or company name is identified, and naming has been eliminated as much as possible. Individuals throughout the text are characterized by their work in the company—an ethnographic abbreviation of job title histories and roles; their company tenure, calculated as 1998 (the year of this work) minus their year of company entry; and also the workshop training group in which they participated (of 4,—the pilot group called Group D, and three consecutive groups following two months later, A, B, and C).

Though the name of this site has been largely avoided and changed where necessary here, its role and significance in the historic consciousness and experienced lives constituting the cultural text(ure) of this company should not be ignored, particularly in a dissertation focused on language and meaning and their changing relationships in use over time. The name of the company studied here articulated its city of origin as well as the industry it was within and is cited by a pseudonym in this text, X____ Gear, and variations upon it.

Acknowledgments

I will do my best in this life to acknowledge my appreciation and my gratitude to the many people who have taken me to this point. I have very many people to thank, and most remain unnamed here.

I offer this to the people who worked at the company I studied in 1998 and 1999, "the old guard," who let me into their working lives and showed me a disappearing culture of work right before it was gone. To witness them in their work was an enormous privilege and to study their ownership of it was a lesson in history and humanity at once. To them I am most deeply grateful.

I did this work with my partner in scholarship, Patricio Calderon, and I thank him for such true collaboration as we shared over the years of the research described here. Our many conversational hours in the dark drives between New York and this site underlie the ideas developed in this dissertation and his own research has been a source of continual inspiration and dialogue.

This dissertation as a methodological project was born of the path I took to be writing it and the diversity of my teachers along the way. Dr. Patricia Sachs and Dr. Sylvia Scribner taught me about Vygotsky and introduced me to ethnography, research, data, and the optimism of an activity based developmental perspective in 1988. They hired me into the work of their historic interdisciplinary collaboration and planted the theoretical and methodological seeds of my thinking. They employed me, taught me, and mentored me, and planted the seeds of this research.

This project comes very much from what I learned from them, but its formation answers a challenge put forth by my advisor, professor, and friend of many years, Dr.

Joseph Glick whose calls for an ethnographic and prosthetic psychology I have chosen to answer here.

Dr. Katherine Nelson, whose experiential perspective on cognitive development has been a continual resource for my ideas, has anchored my thinking about the development of language and word meaning. Her editorial attention to structure has helped me to hone this text into readable form as well.

For his love of the human story, I am eternally grateful to Dr. Vincent Crapanzano whose support of the biographical and historical orientation of my pursuit helped me to see what happened in its epic proportion and to write it down in its ethnographic detail.

To my advisors, Joe, Katherine, and Vincent, I owe enormous thanks for their patience to let me keep working, for their wisdom to not let me stop, and for the work they did in reading this many times (and when it was as much as 600 pages long) and helping me sort it out. I thank my committee members, Dr. Anna Stetsenko and Dr. William Kornblum, for their generous reading, insight, and questions upon the event of my dissertation defense and along the way. To be at a table surrounded by all of you was for me a great honor.

Finally, I thank Adam Distenfeld for his patience, support, and many lessons along the way. I thank Dr. Claire Daigle for endless conversation and reading of this dissertation, and for friendship. I thank my twin sister Audrey for what is ours, and my family for their love, care, and curiosity.

This is dedicated to the memory of my Grandpa,

Charles R. Good (5-5-5-11-26-3)

whose work as a Manufacturing Engineer,

managing the tools of labor and the process of production,

spanned the industrial century.

Table of Contents

List of Tables

List of Figures

INTRODUCTION

The essence of humanity—work
(November 27, 1999, Manufacturing Engineer, telephone interview).

This dissertation has its experiential, methodological, and topical origins in the interdisciplinary approach of the cognitive study of work developed by Sylvia Scribner (1984, 1985, 1986, 1990). Following Scribner and many of her colleagues and students, I gained my theoretical footing in Activity Theory and my methodological focus on language use—as subjectively, expressively and objectively productive—from the writing of Lev Vygotsky (1978, 1986, 1987). I have adopted Scribner's focus on work as a most valuable inheritance and have borrowed the optimism of a developmental approach from the entire Vygotskian tradition.

This is a study of psychological ownership—how we own the property of others, how we extend our reach even where we are arguably most alienated—on the job. Describing a range of evidence for psychological ownership, from possessive expression to innovative practice, I make a case for its place in a historical functional ethnographic developmental cultural psychology of work activity.

Work as activity. For Vygotsky, activity is a unit of development, as well as being a resource for the development of the human personality, playing both methodological and theoretical roles. Most critical is the notion of activity itself as psychologically generative, socially mediated, historically situated, objectively productive—as psychological, social, institutional, and material at the same time. The mix of these aspects in any particular instance is always a question for research and the complexity and multiplicity of activity as an object of inquiry requires a theoretical practice of method outside the bounds of any single field of study. Activity Theory can only be

interdisciplinary work. The relationship between worker and work is a matter for historical, cultural, and psychological inquiry.

Vygotsky's theoretical focus on the central role of activity leads directly to the research domain of work in both cultural and psychological terms. Scribner heralded work as the ideal research domain both for the study of adult cognition and development and for the practice of Activity Theory and cultural-historical research. This was coined most succinctly in her characterization of skilled practice and thinking at work as "mind in action" (1986) and was articulated in her deeply cultural view of adult cognition itself. Work provides rich terrain for the study of cognitive and material transformations in the interaction between human subjects and material and social environments and for the theorization of culture, from an Activity Theory perspective, as mediational ground.

Scholars across disciplines articulate the importance of work both as a research question and as a human development concern (see Gamst, 1995). Regulating the daily experience of its participants, work deeply influences the individuals that people, across their adult lives, become. As a dominant activity context of adult development, work colonizes subjectivity, saturates memory, and shapes the self. It drives and arrests development and may jeopardize or enhance the teleological potentials for generativity (Erikson, 1982), cultivation (Fuhrer, 1991), self-actualization (Maslow, 1968), happiness (Seligman, 2002), even formal operations (Piaget, 1969) that have come to characterize psychologically successful adulthood.

Reaching into every aspect of cultural and psychological experience, work dominates modern adulthood both in embodied time and mental occupation, while being subject to the social, institutional, and historic conditions of access, exclusion, and

discrimination as well. The mediating mechanics of need, resource, and action at work constitute the primary contextual conditions of subjectivity. They populate its substance and shape its experiential course. People feel their knowledge, the technical is personal, and the cultural is cognitive. The efforts and outcomes in which people participate can enable, disable, and condition human development. It is not that people simply know things, but that they are influenced fundamentally by the ways they come to know and the contexts of their learning (see Stigler, Shweder, & Herdt, 1990; Forman, Minick, & Stone, 1993). They are formed in identity as well as skill by social practice and characterized cognitively by the world of particulars in which they participate. Activity provides the very material of being, including its potential for cultivation, realization, and actualization across the lifespan of work.

Experiences of work create the past over years and reach into the future as forms of belief, expectation, wish, and plan. In very concrete, and in much more abstract ways, work is circular with development—they are each other's outcomes and each other's resources. Adults live and breathe their work; they consume it and it consumes them. They produce it and it produces them. Work is transactive across the human-object and self-other divide because of the closely directed, mutually constituting, and dialectically generative relationship between individual development and sustained cultural, social, and material activity as, over time, we become "ourselves" through our working activity.

Engels used the human hand to illustrate the historically evolutionary influence of labor on humanity through social and skillful activity and to propose the notion of cultural development pursued by the Vygotskian psychological approach and often reframed as cognition in the recent decades.

> Thus the hand is not only the organ of labor, it is also the product of labor. Labor, adaptation to ever new operations, the inheritance of muscles, ligaments, and, over long periods of time, bones that had undergone special development and the ever renewed employment of this inherited finesse in new, more and more complicated operations, have given the human hand the high degree of perfection required to conjure into being the pictures of a Raphael, the statues of a Thorwaldsen, the music of a Paganini (Engels, 1972, p. 253).

As for the evolution of Engels' hand, so for the formation of the Vygotskian mind—that extension of the hand so shaped by the pen, so guided by the sign, and so realized in writing.

Worker and workplace. In Vygotsky's materialist approach, activity effects the making of cultural tools, the evolution of social forms, and the formation of individual selves (Cole, 1996; Engestrom, 1990; Fuhrer, 1991, 1993; Leontiev, 1978; Stetsenko, 1998; Vygotsky, 1987). This dialectical dynamic gains increasing complexity across the span of adulthood and especially across extended tenures of work. The interactive reflection that develops between worker and work over time reinforces personalization of the workplace among those with extended pasts on the job, as their own inventive solutions comprise the practice and populate the place of work.

Workers literally inscribe themselves into the workplace itself and into the practice of their work. Their histories become materialized, their solutions embedded, and their biographies reflected in the very infrastructure of the facility in which and on which they work. For them, the place mirrors a history of work as well as being the source of its continuous present. Reflecting prior activity, status, contribution, investment, learning, and experience, it also constitutes the continuous context for ongoing activity and participation. It is not only that internalization of external knowledge systems affects the procedures and practices of work, but externalization

shapes the context of their execution and the eventual form and innovative content of their ideal performance.

Those who work continually improvise tools, innovate solutions, and adapt the given in order to achieve their goals in the face of constraints of both resource and authority upon them. And they must. Even in their historical accumulation and even in their excess, the available tools, information, and material for work are always incomplete to the accomplishment of work itself. From the effort to get the job done are born key tools and practices of work activity that occupy the eventual ground of ensuing working practice. Artifactual precipitates of practice as improvisations and innovations that enable its success and endurance contribute to the unique cultural toolbox and populate the real situation of every work activity.

The very sustenance upon which work relies for its endurance over time is also a continual object of its production as the artifacts and supporting systems of its process are in constant formation alongside the manufacturing of the product itself. Tools are transformed, revived, adapted and invented as humans encounter and solve the problems of their work. It is in work and the problem solving opportunities it provides that the innovations of experiential experts most reliably emerge. Camouflaged by their functionality, practicality, and cultural embeddedness, excepted by their seemingly anecdotal nature, improvisations arise in the continuous production of the process itself, effecting the procedures and tools upon which ensuing accomplishments of work depend. Innovations born as experiments and even as errors become useful and even central to further working practice.

Improvising upon cultural possibilities and from them as well, the individual in expert performance arrives at its most developmentally refined state as well as honing its cultural surround. Certeau (1984) characterized this as the practice of everyday life. In the throes of participation, discovery, error, and invention, cultural individuation is realized, materialized, instantiated, manifest. Everyday practice provides the ground for individual and cultural development whose progress is indexed by participatory authorial action ranging from the choice of a path between places to the use of a language in one's own voice to improvisations of performance, solution, and invention on the job. Practical and principled extensions of thought, speech, and action in context in turn populate the "operational residua" of the process and regenerate the potential for its continuation and further development (Hutchins, 1996, p. 373), as the link between "levels of history" is yet again remade (Scribner, 1985). In a radical reformulation of the problem, Hutchins articulates the social and material environments as part of the cognitive system and cognition as the source of their historical transformations.

> The very same processes that constitute the conduct of the activity and that produce changes in the individual practitioners of navigation also produce changes in the social, material, and conceptual aspects of the setting... All this happens simultaneously in cognition in the wild. (1996, p.374).

Hutchins' notion of distributed cognition casts the social and material space of cultural activity as part of cognition itself, providing an explanatory framework for both the historical materiality and the psychological authoriality of culture as they occur together, dialectically and continually, though diachronically in different cycles. In the cognitive distribution across the human and material planes which constitutes the practice of activity, the subjective space of individuals is prosthetically expanded, socially

transacted, and historically connected. The distribution of cognition when work is in action maps upon an authorially active and materially complex mediational space.

Inheriting history and simultaneously creating it, cognition at work is distributed (Hutchins, 1996), externalized (Donald, 1997; Engestrom, 1987), and collaborative (John-Steiner, 2000) all at once. "In the footsteps of others" and "on the shoulders of giants," adults work on historical ground while remaking its substance and shaping its goals (Fuhrer, 1991; John-Steiner, 2000). The distribution of workers' knowledge resources and products in the work environment compels a studied consideration of the role of history and inherited architectures in the experience of work and human development as well as in the composition and constitution of culture itself.

The unit of analysis must include history as it is both remembered and inhabited, and as it persists in artifacts, technologies, and concepts in use, as stories in exchange, as lessons, plans, memories, and intuitions. The workplace must be read as authored and reauthored ground, and the distribution of cognition as the very spread of the already collective situated subject, expertise at work. As resources and products of the social orchestra of expert practice in the workplace, cultural tools are historic innovations and culture itself, a collection in use. As people work in places they do not own, they remake and rework those places. They change them and are changed by them as well. This emergent improvisation in the service and margin of getting work done has been variously theorized as "bricolage" (Levi-Strauss, 1962 / 1966); tactics or *la perruque* (Certeau, 1984); expansion (Engestrom, 1990); skill (Attewell, 1990; Shaiken, 1985); practical thinking or "mind in action" (Scribner, 1985); *habitus* (Bourdieu, 1977; Bourdieu & Passeron, 1977); situated knowledge (Suchman, 1987); even expertise (Dreyfus, 1997). Alongside these, I

propose psychological ownership to describe the dialectical interaction of inheritance and innovation in learning that is at the heart of the human-culture relationship.

The study of use. The power of Activity Theory for the study of work includes its rich methodological account of mediation. A semiotic psychologist if ever there was one, Vygotsky focused on mediation itself—"tool and symbol"—as the proper zone of analysis and insisted on their study in action and in development (1930; and see Luria & Vygotsky, 1930/34). Vygotsky described the ways in which mediational means bridge institutional and individual processes, influencing culture and cognition at the same time. In doing so, he articulated the dialectical and co-creative relationship between cultural and psychological processes, between history and biography, in activity.

Vygotsky proposed externalization and internalization to articulate the psychological functions associated with activity and to emphasize the key subjective relations of authorship and use. With the insight that internalization and externalization mark functional shifts between the cultural and the cognitive planes, Vygotsky radicalized the notion of the unit of development and provided a powerful alternative to the atomization of functions and the finite characterizations of the individual that typified Western psychology. He characterized his approach to psychology as the study of "cultural development" (Glick, 2004).

Responding to the ensuing dominance of internalization as a point of focus in psychology, many scholars have begun to explore externalization in explicit and methodological terms. Most prominent among them, Engestrom asks, "Can creation really be understood as internalization only? If that be so, how can we explain the emergence and renewal of external culture? Does it have nothing to do with learning?"

(1987, p.31). Emphasizing externalization and its artifacts as a methodological source of data as well as an object of theoretical development, Engestrom's theory of expansive learning accounts for transformations of both material and cognitive consequence. Demonstrating the power of an Activity Theory approach to the consideration of learning at both individual and organizational levels, he articulates the necessity for a grounded theory of innovation and of other forms of externalization more generally.

Fuhrer (1991), extending Vygotsky's ideas through a reading of Simmel's sociological theory, proposes a model of transactional cultivation as a functioning balance of internalization and externalization between so-called internal and external minds, in which subjects both author and are written by the cultural spaces they inhabit. He emphasizes the simultaneity and mutual enhancement of externalization and internalization as they constitute the interactions of subject and context through which the dialectical potential for both cultural formation and human cultivation become differentially and simultaneously realized. Externalization and internalization are continual, interdependent, and mutually influential processes in the work of human learning, in the potential for human cultivation, and in the formation of culture itself.

With increasing recognition that tools change us and are changed by us in use, the unit of analysis has shifted to activity, to situated engagement, externalization, authorship, and use. (See De Certeau, 1984; Engestrom, 1987, 1990; Goodwin, 1994; Hutchins, 1996; Lave, 1988; Klein, 1999; Keller & Keller, 1996; Norman, 1982; Scribner & Sachs, 1991, Suchman, 1987). The study of use is a rapidly developing enterprise in many applied fields and interdisciplinary projects. These include the emerging Participatory Design movement largely focused on electronic application design, as well

as the earlier SocioTechnical Systems approach to workplace organization and ergonomic engineering approach to workplace environments. Cultural and cognitive research, including work in Activity Theory, Actor Network Theory, Action Research, and new constructivist educational approaches converge in their recent attention to use as well. Across these perspectives, the study of use involves a reconceptualization of the subject as socially and technically situated and of context as intentional, mediational, and influential culture.

Work as alienation. That we are made through making is the working premise of a materialist approach to psychology that challenges idealist forms of inquiry in its focus on the functional, experiential, cultural, and historical aspects of development. That we inherit a world and author it as well is the essence of the human condition and the basis of a materialist approach to its study. That we work in a technological environment that changes in historic proportion across the course of our experience of it points to the necessity and capacity of continual learning and to its historic accomplishment. An activity based approach attempts to link these phenomena and to address them in a unified framework rather than isolating psychological functions from each other and from cultural, political, and economic history in their investigation (see Scribner, 1985). That we occupy a double role—functioning as subjects of use value as well as objects of exchange value, as both labor and wage, is the contradiction faced by a historical materialist approach to the psychological study of work (Axel, 2000; Engestrom, 1987; Marx, 1975; Vann, 1998).

Across disciplines united by an activity approach, it is widely accepted that humans are produced by their production of things, adults by their work. Though the

production of humans occurs through their production of things, though, it typically occurs through their production of things for others in adulthood, and the tools offered by Activity Theory face certain limitations and complexities in considering the context of modern work. Characterized fundamentally by the alienation of economic claim from productive action, modern work poses unique challenges to a pure activity approach.

Marx traced the proprietary uncoupling between workers and their means of production to the capitalist system of industrialization, wherein machinery and facility overhead—the material or asset base of industry—are owned by investors or owners, while they are put to use by employees. "Finally, the alienated character of work for the worker appears in the fact that it is not his work but work for someone else, that in work he does not belong to himself but to another person" (Marx, 1964). The increasingly massive scale of production exacerbates the capital intensity of the industrial workplace, and the costs of rapidly changing technology preserve the economic and structural divide between employer and employee in the private sector of manufacturing along the fault line of legal possession.

As Marx and many others have described, the formation of class and organizational schisms between production and property associated with the condition of economic alienation entails the potential for spiritual alienation as well. In his short and most idealistic essay, "The Socialist Alteration of Man" (Vygodsky, 1930 in Vygotsky, 1994), Vygotsky quoted Marx extensively on "the spiritual division of labor" effected by the "social division of labor" of "every form of material production." "The division of labor has caused man himself to become subdivided. All remaining spiritual and physical faculties are sacrificed for the sake of developing just one type of activity" (Marx, K.

1890/1962, p. 381,445 quoted in Vygotsky, 1994). Marx drew a causal relationship between the division of labor in society and the "degeneration of man," and provided as its best example manufacture itself—the social organization of labor involved in the industrialized making of things. Critiquing the historical transformation of material production from craft to industrialized manufacturing, Marx wrote,

> This degeneration of man increases at the same rate as the division of labor, which reaches its highest level in manufacture. Manufacture breaks up craftsmanship into fractional operations and assigns each of them to a separate worker as his life's vocation and chains him down to a specific fractional operation, to a specific tool for the rest of his life. (Marx, K. 1890/1962 p. 381,445 quoted in Vygodsky, 1930/Vygotsky, 1994).

Epitomized by the scientifically managed manual laborer in the first half of the 20th century (Taylor, 1911) and by the industrial assembly line operator in the second half (Ford, 1950), Marx's alienated worker has laid the ground for many critical studies of work since (Milkman, 1997; Shaiken, 1985).

Across the 20th century, scholars have also pursued the empirical application of Marx's notion of alienation toward a psychology of modern work (Blauner, 1964; Kusterer, 1980; Lystad, 1969; Sheppard, 1971), while others have contested such a use (Braverman, 1974). Notable among alienation studies is Blauner's widely cited analysis of how variations of technology and labor distribution in different industries and in office vs. shop environments shape a range of psychological potentials from "freedom" to true self-estrangement at work (1964). Measuring subjective states of freedom and alienation along a continuum of satisfaction at work and charting their variation according to the technological conditions and social arrangements of work, he described a range of "alienating tendencies" across industries and jobs within them.

Blauner's study and others like it have been criticized by Bravermen (1974) for misconstruing Marx's notion of alienation in their psychologization of it. Where such studies have used alienation to signify the personal subjective withdrawal of the self from work activity and experience as in Blauner's 1964 use, Braverman' s 1974 formulation takes a more sociological approach. For Braverman, alienation describes the sociological and economic decoupling of legal ownership from labor, a condition rather than an outcome of modern work. Marx, it seems, can be read both ways.

An alternative to alienation. In cautioning against the crippling division of labor, including the formation of special psychological subtypes and compounding stratifications of value among them, Vygotsky presented an optimistic psychological alternative to the alienation outcome, and he called this alternative "collectivism" or "a higher form of human freedom" (1930/1934, p. 182).

> More than once, Marx demonstrates how labour by itself or large scale industry by itself does not necessarily have to cripple human nature, as a follower of Rousseau or Tolstoy would assume, but, on the contrary, it contains within itself endless possibilities for the development of the human personality (Vygotsky, 1930/1934, p. 179).

Positing an alternative to the alienation hypothesis, Vygotsky described an ideal for work in which human development and production would not be at odds. Using Marx and Engels, he formulated a deeply considered notion of the psychology of work in terms of its potential for degradation and alienation or enlargement and expansion of the human experience. He promised the possibility of empowerment and human development at work, though the ensuing history of work has fallen far short of such hope.

As scholars and journalists of work continue to debate the question of alienation in the workplace, they have outlined the contradictory potentials for human enrichment

and degradation in the process of making a living and have articulated a notion of psychological ownership alongside other alternatives to the alienation hypothesis. Marx's alienation provides the cornerstone for theories of empowerment at work, as well as modern notions of psychological ownership from academia to the workplace.

> In order to earn a livelihood, we are compelled to work hard at things that are beyond ourselves. If the effort and the product of that effort make us more human, if we feel like the owners psychologically, if not materially, of the product, and if enough of our coworkers feel the same way, then we are on to something quite rare, at least in a for-profit economy—so rare, in fact, that we can ill afford to dismiss any encouraging evidence that comes down the pike (Ross, 2002, p.2, emphasis added).

Like Vygotsky's "collectivism," Ross's psychological ownership describes an aspect of potential humanization in work.

Dupre traced Marx's concept of alienation to its historical and philosophical roots in Hegel's notion of "that form of objectification in which the mind no longer recognizes itself in its objective creations" (Dupre, 1983, p.19). Just beyond this alienated objectification lurks an idealized subjectification, an originary or primal experience of recognition of oneself as extended, reflected, and connected through ongoing externalizations of knowledge and action. Located in the past as a point of origin, an Eden, a certain paradise, this potential for self-recognition in work begs the question of its relevance and cultivation in the modern day.

In powerful contrast to the alienation outcome as Hegel, Marx, and especially Vygotsky suggest, the human mind might recognize itself in what it makes , or perhaps in what it uses and does at work. This potential for self-recognition in the elements and objects of activity—be they tools, words, actions, or products—compels a theory of psychological ownership and a study of belonging at work.

Psychological ownership and possessive expression. Most well and widely known for the idea of psychological ownership and for a theory of possessive expression is William James. "It is clear that between what a man calls me and what he simply calls mine, the line is difficult to draw. We feel and act about certain things that are ours very much as we feel and act about ourselves..." (1890/1955, p. 291). Tying psychological ownership to the expression of possessive language, he articulated the idea over a century ago without actually coining the term or interrogating it in experimental terms and proposed a methodological approach to its measure as well.

James' ideas offer a powerful foothold and methodological starting point for a functional orientation and grounded empirical approach to the question of psychological ownership. James' insights about the linguistic formation of possessive expression and its functional origin and experiential referents provide an important basis for my work and align with the premises of a Vygotskian and activity-based approach. James described the psychological, emotional, and linguistic extension of possession as the "fluctuating material" of the "empirical self" and explained the empirical self as what one "simply calls mine." "The Empirical Self of each of us is all that he is tempted to call by the name of me" (1890, p. 291).

For James, objects gain inclusion in the empirical self through the experience of emotional and practical life, and especially through work. "The parts of our wealth most intimately ours are those which are saturated with our labor," he claimed (p. 293). James most clearly articulated the functional nature of psychological ownership, by which it gains its powerful kinship with Activity Theory, in his notion that objects of work investment populate the empirical self. In pointing to "our labor," he suggested the potential of work

activity and even jobs to compel psychological ownership, to enable learning as well as earning, and to cultivate empowerment as well as production. He articulated the social and technical origins of psychological ownership and identified its basis in cultural experience, activity, and especially in work.

Implicitly and apolitically, James' empirical self articulated a psychological alternative to the worker alienation narrative more typically associated with the psychology of modern work, or at least an elaboration upon it. Sharing the same social and material conditions that underlie the alienation hypothesis—i.e., the workplace itself—psychological ownership provides a developmental complement and activity based theoretical alternative to the alienation outcome of work proposed by Marx.

Despite this potential in his work, James failed to acknowledge the duality and potential social contest of psychological and economic property. His metaphorical use of the word wealth subtly indexes, though he left uninvestigated, the potential conflict between economic and psychological property in everyday adult working life. James did not unpack economic property as a relative condition of experience and biography, nor did he adequately distinguish economic ownership from the psychological engagement of the subject in activity as sources for the empirical self. Conflating the multiple meanings of ownership while denying their contradictory relationship to each other, James used our to mark the contradictory terms of wealth and labor, stimulating several questions that remained unaddressed by his individualistic, decontextualized, and literal approach. First of all, he did not explore the relationship between my and our, leading many to develop theory around a "psychology of 'mine'" in their ensuing notions of psychological possession (see Pierce, 2004 for review; Litwinski, 1947).

Further, James made no distinction between the earned and the owned and did not resolve the signification of possessive expression in terms of its semantic straddle between psychological signature and economic claim, particularly when considered in the economy of work. He did not adequately disentangle the literal from the literary, property from psychology, wealth from labor, nor did distinguish between these as sources for the autobiographical expression of possession in speech. James did not show the tendency of actual language use in the service of psychological vs. legal / economic ownership, though he did explain the anchorage of possessive expression in activity and in work. His lack of clarity on the distinction between legal and psychological property is compounded by the contents he used to illustrate the empirical self. "Not only his body and his psychic powers, but his clothes and his house, his wife and children, his ancestors and friends, his reputation and works, his lands and horses, and yacht and bank-account..." (1890, p. 291). With elite assumptions of class and gender intact, this Jamesian gentleman is no match for the industrial worker of modern Marxist theory.

While explaining the theoretical importance of material experience, activity, biography, and even work, James' owned objects imply a person of privilege, leisure, and wealth. In failing to problematize economic and social conditions, he did not confront the theory of alienation itself. His model of the empirical self remained depoliticized and decontexted, depicting an owner in the capitalist scheme. Because of this, the potential of his theory of the empirical self for the formation of a biographical psychology, sensitized to work as both context and content of the self, remains undeveloped. Still, James offered the valuable assumption of adulthood in his theory of the owning self and described "a man's Self" equally true of us all as "the sum total of all that he CAN call his" (p. 290).

My task was to use James' insights in the direction of a materialist and Activity based approach to the problem of psychological ownership in terms of work. Charting a methodological path through the examination of possessive expression as a discursive phenomenon —"what he simply calls mine," I brought Vygotsky and Marx to bear on James in order to extend the alternative to alienation that he suggests. A notion of psychological ownership derived from activity transgresses economic boundaries of property and approaches the backside of the psychological alienation hypothesis accumulated across the Marxist sociology of work. As Vygotsky's "collectivism" and James' "empirical self" collide, the notion of psychological ownership presents itself as an ideal unit for the analysis of cultural subjectivity, and possessive expression as a viable, if somewhat incomplete, approach to its capture, measure, and study.

Expressive development. In empirical pursuit of the Jamesian empirical self and working within the framework of Activity Theory toward a study of work, I employed the unit of possessive expression both to measure psychological ownership at the individual level and to map the cultural space of work at the ethnographic level. With the full intent of an Activity Theory approach to the workplace, I sought a research method of building a cultural portrait of the company from the subjective space of technical and social activity. In order to capture a point of view on the culture of activity from the viewing eye of the subject and from its moving hand, I sought a unit of analysis that could both contain and reveal the psychological union of culture and self. I looked at possessive expression as one of many ways by which to reveal the relational intimacy between person and environment that constitutes work, activity, or Scribner's "mind in action."

It is my argument in this dissertation that just as innovations manifest the technical and material precipitation of subjective work activity, possessive expression indexes a psychological and symbolic density of the same. Possessive expression is the psychological complement to artifactual innovation in a theory of the self, expanded by a notion of psychological territory and social space. The moment of possessive expression operates discursively, I argue, as authorial act and signature of relational transformation, and renders a cultural horizon, a view from within. Possessive expression as a textual pattern of such authorial and signatory acts provides data for both developmental and ethnographic use, as it exposes the union of person and culture in expressing the essence of the expert at work.

My investigation of psychological ownership in adult development was inspired by postmodern notions of the prosthetic self (Glick, 2004; Shotter, 1993) and the modern cyborg (Haraway, 1991). In its pursuit, I reviewed models of the experienced self (Crapanzano, 1992), the experiential self (Nelson, 1996; Reed, 1996), and the extended self (Neisser, 1988, 1994). In order to consider the social implications and theoretical underpinnings of possessive expression as the artifactual signature of the experiential self, I considered the literature on situated action (Suchman, 1987), distributed cognition (Lave, 1988; Hutchins, 1995), and cognitive anthropology (d'Andrade, 1990). I appropriated philosophical and sociological models such as Bourdieu's *habitus* (1977) and Schutz's "lifespaces" (1967), in order to ground the relations between subjective and cultural space.

Most of all I relied on Vygotsky's ideas of activity as mediation to explore the dynamic processes by which the tools we use become "ours" in the realization and

cultivation of the self through social constructive activity, through participation, and ideally through work. Like many other theorists, I am suggesting that self and world, inside and out, reach beyond the visible and grammatically reinforced boundaries between them and into each other, as history on the individual and social plane intersect in mutual transformation (See Scribner, 1985). In language performance, where self is emergently cast, I pointed to a region accomplished by this reach and approached the notion of culture from the ground up, mapping the assembly of individual collections of possessive expression as a social culture of manufacturing voices.

Scribner made the case for looking at "individual speech" as well as actions for the study of "subjective representations of objectified knowledge systems."

> Individuals gain knowledge of objects, including conceptual objects, by engaging with them for particular purposes and under particular conditions. Thus, we would expect that subjective representations of objectified knowledge systems will exhibit a great variety corresponding to differing individual histories of engagement with the concepts incorporated in these systems... Subjectively constructed concepts become manifest in and through individual speech and actions (Scribner, 1990, p. 5).

She described the unique co-production of subjectivity and objectivity in verbal as well as practical action and promoted the analysis of speech in the study of cultural cognition.

It was my reading of Vygotsky's description of word meaning that led me to identify possessive expression as a developmental unit of analysis, unique in its capacity to reveal the synthetic potential of language to integrate subjectivity and objectivity in the use of words and the metaphors of possession. According to Vygotsky, meaning shifts developmentally not only in terms of skillful associations between sound, symbol, mark and sign, but in terms of the relation of a word to the self across biographical time and language use. Vygotsky described the course of word meaning development in terms of the

biography of language use, illustrating word use as both possession and production. In his reading of Tolstoy's birth of a word in speech, authorial use becomes a developmental moment of subjective and cognitive possession. In textual dialogue, Vygotsky quotes Tolstoy, for whom word reception and word use fall into developmental moments in individual biographies of language:

> The child hears or reads a word that he does not understand in a phrase that he does. Later he hears or reads it again in another phrase. Through this process, he begins to acquire some vague understanding of it. Ultimately, he begins to feel the necessity of using this word. Once he has used it, the word and concept are made his own. There are a thousand paths to this same end. (Tolstoy, 1903, p. 146, quoted by Vygotsky, 1987, p.171, emphasis added).

Tolstoy described first production of a word in speech or writing as a psychological act of possession as well as a cognitive accomplishment of learning, itself a kind of end.

Vygotsky's own conceptual innovation followed in his reformulation of "this same end," this moment of use, as a starting point in the development of word meaning and its linkage with concept development for the learner.

> The path from the child's first encounter with a new concept to the moment when the word and concept are made the child's own is a complex internal mental process. This process includes the gradual development of understanding of the new word, a process that begins with only the vaguest representation. It also includes the child's initial use of the word. His actual mastery of the word is only the final link in this process. We attempted to express what is essentially the same idea in our argument that, when the child first learns the meaning of a new word, the process of development has not been completed but has only begun. (Vygotsky, 1987, p. 172).

Pointing to authorship of the word in mind as well as in speech and writing, Vygotsky proposed first use as a developmental beginning in the formation of a word on the internal plane of consciousness. He called this internalization. As authorial expression initiates a word's psychological possession, surely the moment of its possessive expression marks its subjective advancement along this path.

Possessive subjects (pronouns) and objects. The uses of personal possessive pronouns, my and our, in speech and writing are linguistic moves that express, affect, and effect subject positionality. Generated by the freedom of expression itself, their intentionality as meaning is not typically fixed, factual, or even complete. Possessive pronouns are produced in ways that often even their authors can barely recount, confirm, or defend. They are non-literal speech acts most of the time, metaphors in action, informal expressions rather than statements of legal fact. They are voice, a concept borrowed both from Bakhtin in Russian semiotic theory (1981, 1990) and the feminist theories of Gilligan (1982) in psychology.

Symbolic ownership is connotative, metaphorical, indexical, and in Halliday's terms microsemantic (1978). The production of meaning is made and can be measured, Halliday claims, in the microsemantic intricacies of linguistic choice.

> Everything that is said presupposes a background of what might have been said but was not. In linguistic terms, each decision of the speaker--each microlinguistic act, as it were--presupposes a paradigmatic environment, a set of options that have the potentiality of being selected under the given conditions. This is the background of what might have been. (1978, p.24).

Borrowing Halliday's level of analysis, my goal was to trace a microsemantic act at the critical nexus of identity and culture—in activity. I looked at microsemantic acts of possession over textual time in order to conduct the developmental ownership analysis described here as well as analyzing microsemantically-owned objects for the paradigmatic environment they indexed and together described.

Looking literally at the self as it is pronominally indexed in language, I isolated the expression of personal possession in both its individual and collective forms—specifically the uses of my and our—for analytic, exploratory, illustrative, and

methodological reasons. Investigating the possessive voice as a research tool for charting an activity domain as cultural and experiential space, I studied its expressive range across individuals and its contextual illumination among them, as well as its development and change within individual voices over experiential activity and time.

In use, personal possessive expression is a grammatical step with a twist—that it contains or inheres an object, carries something with it. Like I and we, my and our locate a subject within and outside of particular communities and boundaries of practice and establish frames of belonging, categories of experience, and cultural domains of participation. Possessive terms do more than this, though. Unlike I and we, my and our always mark other language objects rather than standing as grammatical units in their own right. In modifying, they depend. They attach and belong and collect. Always linked to another linguistic object in order to operate as a functional piece of language in motion, the proprietary pronoun reaches like a verbal hand and holds objects, things, tools, people, ideas, opinions, and selves. In its expressive dependence upon an object, the possessive pronoun curates an intimate collection, picking things up one at a time in words. I targeted possessive expression as subjective action because of its unique dependence on objects and its potential illumination of a place from within.

Pronoun and object arise as a unified semantic production woven reliably together into the personal activity of language use and the work of subjectivity. Possessive expression precipitates activity and describes a density of interaction (see Hutchins, 1995), comprising a unique hybrid that is at once person and world, individual and environment, self and context. Possessive expression articulates a subjective and cognitive space of objects, but not a private one; rather it depicts the public and social

domain of cultural practice and details it in particular depth. In units of possessive expression, subject and object, person and world, are uniquely wed, and in the analysis of this co-production, can be both developmentally and ethnographically decoded. The contingent use of the possessive pronoun upon an object that it marks provides a unique linguistic synthesis of self and world and presents an ideal unit of analysis for the grounded depiction of an operating cultural space of active social subjectivity.

I analyzed possessive expression among a culture of experts to discover its psychological functions as well as its ethnographic potential. In isolating linguistic possession for study, I sought structures and dynamics of "the expressive self" (Langer, 1951) and viewed language use as production, an activity whose procession of text potentiates emergent patterns of word use, rhythms of expression, and shifts of subjective strategy. I sought patterns of possessive expression in the simultaneously material and symbolic planes of writing and at a microgenetic level, at the level of the voice itself, produced linearly over page and from session to session.

As writing illustrates the self-world connection through the naming of a linguistic object world as own, it illuminates the contents of possessive projection as resources for the voice, extensions of the self, and territories of the working / speaking / writing subject. As a complex and dialectical zone of interaction, subjectivity constitutes a system of relative reach and situational contingency and is also constituted by it. Its expression effects a relational web of inclusions and category formations. It describes a horizon whose structure is indexed by the presence and content of possessive speech.

Subjectivity is an open and unfixed system and thereby a reflective one, through which cultural territory can be charted and traveled and the ground of work illuminated,

mapped, and read. Culture-in-self is literalized through linguistic acts of possession and by the objects held therein, effecting a portrait of cultural knowledge from its most personal and intimate source, from its experts. I wanted to know what the culture of work would look like reduced in such a way to this collection of possessed objects, and to examine its ethnographic value—to analyze this collection as artifacts of cultural meaning.

I saw objects of possessive expression as marking a set of things that become tools through their subjective transformation in activity—their instrumentality, their use (Engestrom, 1987). Within the Vygotskian system, I saw symbolically owned objects as arriving into use, being grasped for action as tools in hand, and asked what becomes a tool and for what and by whom? What is pulled into the grasp and held in the linguistic hand of possessive language? I exercised the measure of subjective possessive expression as a lens into the toolbox of a working culture in motion, as an ethnographic unit of analysis.

A REVIEW OF THE LITERATURE ON PSYCHOLOGICAL OWNERSHIP

Universally citing the Jamesian mantra, "between what a man calls me and what he simply calls mine..." (1890/1955, p. 291), many scholars across disciplines describe the process of making one's own in the learning process, using psychological ownership to describe a subjective transformation in learning and identity. While some take psychological ownership as their object of research and many others refer inadvertently to the process of making one's own in learning, I have found none to pursue such a literal approach to methodology as the measure and analysis of possessive expression.

In business and psychology. Much of the research pursuing a measure of psychological ownership has focused on situations involving varying degrees of legal and financial employee ownership. For instance, Pierce (1991) has suggested that worker share-holding and economic representation promote psychological ownership as well as "ownership behavior" including improvements in work performance and attitude, approximating productivity. This line of reasoning and research has been reviewed extensively by Russel (1985) as well. Focusing on the relationship between psychological and legal ownership in cooperative and employee-owned workplaces, Russel described the benefits found across instances of their greatest alignment.

Theorists of psychological ownership, across education and workplace alike, have developed an array of performative symptoms and attitudinal behaviors that can be coded and measured as variables of psychological ownership and analyzed their development in both education and the workplace.

Researching the workplace context, Pierce et al. (2003) outlined behavioral effects of psychological ownership ("PO") associated with conditions of employee

ownership at work including volunteerism, risk, responsibility, and stewardship as well as resistance to externally imposed revolutionary or subtractive change. They described the roots of psychological ownership in "three human motives: (a) efficacy and effectance, (b) self-identity, and (c) having a place" (p. 1092), and analyzed the subjective dimensions of psychological ownership as aspects of control over, knowledge of, and self-investment in target objects. Seeking the "development and validation of a measurement instrument of psychological ownership" (p. 2676), their own measures of psychological ownership have been adopted by other researchers as well (see Vandewalle, Van Dyne, & Kostove, 1995).

Savery has extended the notion of psychological ownership to the educational process (2002), proposing "ownership for learning" and its role in student achievement of collaboration among members of student workgroups. In this work, psychological ownership was measured in the analytic construction of student "ownership profiles," based on indicators from student behaviors including affective factors, social/personal factors, and individual performance differences, and students were studied across disciplines, from business to physics, in terms of collaborative scholarship and writing.

Notably, Avitel and Vandenbosch have even employed Activity Theory to study the concept of psychological ownership in changing relations between information technology staff and operations managers with the implementation of new computer technology at work (2000). Describing a partnership between IT professionals and business managers, they explain how psychological ownership of technology can be transferred from system designers, authors, and technicians to system users. Proposing measures such as "co-ownership," their work forges the notion of psychological

possession as a relational social construct potentially spanning workplace departments such that system authors and system users come to share or co-own technology across the course of its implementation. In focusing on technological changes to existing practice at work, their research sheds light on a process not only of human development, but of cultural transmission. Most importantly, it points to the two key subjective relations of authorship and use in the formation of psychological ownership.

The sociological approach to psychological ownership. A very different theoretical approach to the idea of psychological ownership draws from the sociological notion of "knowledge ownership" articulated in Sharrock's 1974 paper, "On owning knowledge." There, he described institutional ownership of knowledge, such as in "Chinese medicine" and "Western thought," and described the ways that knowledge becomes culturally assigned, verbally encoded, and mentally conditioned as belonging to others.

Though Sharrock did not develop the implications of this institutional ownership for the individual(s) in society, ensuing scholars have brought his theory to bear on the question of learner psychological ownership. The sociological and psychological approaches to ownership, describing institutions and individuals alternately as owners, are integrated in accounts by Lave, Goodnow, and Ochs, all published in a single edited volume (1990). Each articulated the notion of ownership from a feminist theoretical perspective, emphasizing the potential and even reliable exclusion of individuals' social identities from institutional representations and the need for a theory approaching the excluded cultural subject. In historical and theoretical concert, they articulated ownership

as a subjective potential for resistance and psychological survival in the face of institutionalized social exclusion or teacher ownership of knowledge.

Elaborating Sharrock's notion of institutional knowledge ownership, Goodnow argued that knowledge ownership is encoded in the cultural forms of knowledge transmission. Stressing the institution rather than the learner as owning, Goodnow illustrated further how domains of knowledge become codified as belonging to particular areas or kinds of people. Making the crucial point that knowledge is not freely shared or neutrally delivered, but addressed and thereby partial to certain social identities, she petitioned for research to address the connections between knowledge acquisition and social identity. In kind, Ochs recast the developmental shift of novice to expert, typically framed as cognition, in terms of the shift from newcomer to member, outsider to owner (Ochs, 1990, p. 289). Inflecting the cognitive questions with social dimensionality, she reframed the issues of learning and competence in terms of contextual and interactional factors such as subjective access, cultural opportunity, and the history of power.

Developing both individuals and institutions as knowledge owners, Lave described a contest between students as potential owners and teachers as institutional owners of knowledge that determines the potential for learner appropriation. She explained that learners may be excluded from learning by the extent to which institutional representatives and representations own the problems they face. "The more the teacher, the curriculum, the texts, and the lessons 'own' the problems or decompose steps so as to push learners away from owning problems, the harder it may be for them to develop the practice" (Lave, 1990, p. 324). In contest with such institutional ownership, Lave described a second potential owner in the learning system. She defined understanding as

"owning problems" and authoring practice and suggested that such agency is crucial to the success and progress of learning.

> When the teacher specifies the practice to be learned, children improvise on the production of that practice but not the practice itself. And it is not possible to resolve problems that are not, in some sense, their own... "Owning problems" and "understanding" are closely related in a conception in which learners appropriate knowledge into their improvised everyday practice. (Lave, 1990, p. 324)

Learner ownership in Lave's view entails a subjective transformation of cognition that can be enabled by one's inclusion there or hindered by one's exclusion, as possessive restructuring of cultural space is mediated by cultural symbols of institutional ownership and belonging. Her theory offers a notion of psychological ownership that inverts the notion of people belonging to culture and proposes instead that learning and understanding involve processes by which culture comes to belong to people.

Hiding economic ownership: The semiotics of psychological ownership

Proprietary vs. psychological ownership. Ownership is a word with many meanings, and many owners. In a truer sense though it is many words with fewer ways of being said. In speech, the term toggles between metaphorical and legal meanings. In the workplace one hides the other in systematic ways as power is veiled in the semiotics of company language and artifacts as in the use of the term "ownership" to refer to employee psychology; in the organizational chart; and even the ambiguity concerning the "others" for whom production is done.

The complexity of modern work as a context for analysis is illustrated by a hermeneutic consideration of the ambiguity of this "others" for whom production is done. While it includes foremost an owner of the company itself, this owner becomes discursively masked by rhetorical notions of working for the customer and working for

the boss or indexed indirectly by the notion of working for a paycheck. The structural and historical separation of property from labor in the 19th century and from management in the 20th entailed the increasingly hierarchical arrangement of work as well as widening experiential divides between owner and worker, as between all levels and kinds of work.

Proprietary financial ownership is an economic status—an abstraction of purchase or artifact of inheritance—an economic condition with no necessary, direct, or inherent relationship to the personal experience or biographical history of work activity. Though formal proprietary ownership has no developmental nature, it may have consequences for individual development, as wealth conditions development in its wake so to speak, and creates a range of environmental conditions. An owner's relation to the object and world of work is essentially commercial, both theoretically and biographically separated from the tangible and present world of work activity, though any particular owner may be more or less engaged in the place of work itself. The economic relation of ownership is mediated fundamentally by abstractions of exchange value, profit, investment, and return. That is, proprietary ownership is a legal and economic status transferred by purchase or inheritance having no direct relation to human experience and development.

Psychological ownership, on the other hand, continually emerges from the course of life lived and work done, reflecting an experiential relation to objects, people, and places of work, at whose functional core is activity. At its source is the interactive and instrumental domain of work activity. A precipitate of personal experience in the course of subjective change, psychological ownership is experiential and biographical in the most developmental and functionally materialist sense.

Among a workforce, psychological ownership develops despite the absence of proprietary claim and originates from collective concern for the activity itself, in terms of its sustenance as work over time and in place. The extension of psychological ownership is inevitable at work though always incomplete, as it gains complication, compromise, and even negation from the very tensions between individual and property, worker and workplace, work and job (see Calagione, Francis, & Nugent, 1992; Gamst, 1995). These are the very conflicts between the psychological and the economic as they wrestle over the word "ownership" in the modern other-owned workplace. Focusing on psychological ownership at work involved crossing a boundary into political ground to consider the relations between economic and psychological ownership as they are characterized by two very different currencies and distributed differentially across separate social classes.

Psychological ownership as a management trend. Hunt (2001) explains how the term "psychological ownership" has emerged in corporate discourse across a historical series of management trends.

> What began as "communication' in the 1960's shifted to "worker participation" and "industrial democracy" in the 1970's. By the 1980's it became "enrichment" and, by the 1990's "empowerment." With the new millennium it changed its packaging and was relaunched as "commitment" or its slightly softer twin, "involvement." Its latest format is "psychological ownership" (Hunt, 2001, p.2, emphasis added).

The American national business atmosphere of the late 1990's saw a rising rhetoric of workers' psychological ownership among a growing field of managerial consultants. Over the decade, "psychological ownership" emerged alongside initiatives of skill-based pay and high performance work contracts, on the heels of quality circle and teamwork training imported from Japanese manufacturing practices in the mid-1980's, and in tandem with the distribution and networking of modern electronic technologies.

Presumably its emergence in the business literature entailed the progressive insight that company culture deeply influences business success, not only in terms of the human experience of work but in terms of worker productivity, company earnings, and the bottom line (see Stamps, 1997, 1998).

Despite its progressive potential, however, the corporate approach to empowerment fundamentally underestimates the important resource of worker psychological ownership as well as misconstruing worker resistance as a signifier of disaffection or failure rather than engagement (Kindred, 1999). Rather than addressing people in their actual work activity, corporate empowerment strategies typically entail downward marketing of corporate identity—a specialized hybrid of training and propaganda. Just as affective concerns are typically ignored in technical training programs to impart and certify skill, work content is often absent in empowerment oriented implementation efforts. Typically constructed in attitudinal rather than technical terms, the corporate notion of "psychological ownership" seeks "buy-in" and casts the working subject as consumer rather than producer in the workplace.

Underlying the corporate approach to ownership as attitude are marketing models of employees as consumers rather than producers as well as assumptions of learning as passive and teaching as presentational. Discursively seeking worker buy-in, the corporate approach describes the appropriation of initiatives, agendas, policies, and rules as a matter of compliance rather than construction, taking rather than making, buying rather than building. As company identity and goals are marketed to employees through sales-based methods of training, the individual worker is seen as passive and possessive at the

same time—a buyer rather than a maker, customer rather than producer, and most insidiously, owner rather than labor.

The corporate rhetoric of ownership ignores, bypasses, and even undermines the psychological foundation of psychological ownership itself, developed from the technical and social ground of work activity, by hiding the contradiction of legal ownership on which it relies. Masking the social and economic backdrop of possessive inequality between the owning and working classes and the capitalist exclusion of workers from corporate property and profit, the business agenda and corporate language of ownership as empowerment is fundamentally misleading.

Rather than distinguishing between economic and psychological ownership and juxtaposing them in relation to each other, corporate ownership rhetoric relies upon and benefits from their certain discursive conflation with the mask-like doubling of the word "ownership" itself. Assigning "ownership" to psychology for the sake of corporate strategy denies the semantic doubling of the word "ownership" itself and functions semiotically to occlude economic ownership, to veil the corporate body, and to fundamentally deny the contradiction of ownership described by Marx's conception of worker alienation.

The organizational chart. The masking of proprietary and legal ownership in the corporate rhetoric of psychological ownership is reified in the structuring of the modern company organizational chart as well, which constitutes the primary representational portrait of the "total masterplan" at work (Smith & Wakely, 1995, p.5). Making visible certain members and invisible others, the typical org chart presents a visual hierarchy of salaried job titles that describes the organizational layers and categories of a company's

executive and middle management while excluding owner and labor as they might appear respectively above and below. Indexed on the chart's top by a President and bottom by Manufacturing Supervisors, owner and labor respectively remain un-semioticized and unspecified, hidden in the conventional organizational portraiture of the company. Managers alone appear on the primary organizational portrait of the company, representing "the company" and uniquely semioticized within it (See Figure 1).

Uniquely visible on the org chart, managers are also the least protected workers in the company. Outside of both financial and political representation, the managerial employee occupies a status of deferred authority. From the point of view of labor, managers represent owner interests and will. Meanwhile, to owners, managers are employees. While representing workplace ownership to labor, managers are not owners, and their role is one of displacement in this regard as they are alleged to speak for others with little voice of their own.

The traditional discursive polarization between management and labor stands in for a distinction between owner and labor each characterized by their institutional independence from each other in separate formal systems of representation as management and union, or as at the site studied here, "bargaining unit." While this polarity operates to stabilize and organize relations between owner and unionized labor, no such polarity characterizes the relation of managers to owner. Managerial identity is anchored by neither institutional unity nor proprietary ownership, but concerns instead the functional and symbolic triangulation and mediation between these (See Figure 2).

Managers' lack of representational independence from the ownership and board they represent to the workforce is compounded by their lack of contractual / formal /

institutional protection as an employee category. Managers in this system, as they relate to the bodies of labor and owner both, occupy the contradiction between proprietary ownership and non-proprietary workership internally—individually, intrapersonally, psychologically. Rather than being anchored to an independent representational negotiating body such as a union, their phenomenological resource for collective or institutional identity is constrained to the company itself. Managers face a unique situation in the workplace as salaried and underrepresented members.

A history of management. Many historians describe the technical and personal governance of early 20th century capitalist industrial workplaces in which the union of psychological and legal ownership served to compensate for the relative insecurity of the managerial job (Chandler, 1977; Edwards 1979). Hunt explained the transformation of management across the 20th century as the uncoupling of legal from psychological claim.

> One hundred years ago legal and psychological ownership were fused through owner-managers. And it is still true of most small businesses. However, during the past century, directors of large and publicly listed companies worked hard to divorce legal ownership from management. They have been struggling with the consequences for psychological ownership ever since... (Hunt, 2001, p. 2)

Edwards ascribed a motivational effect to the participatory presence of proprietary owners in the early industrial workplace, calling attention to "the personal ties and more intimate associations between capitalist and worker" (Edwards, 1979, p. 54). Developed through shared experience over time, these ties characterized the only source of job security for an expanding category of unprotected employee, the modern manager, across the 20th century.

Traditionally, emotional ties and identification between owners and employees served to compensate for the lack of formal protection, representation, and unionization

of the managerial workforce. Edwards suggests a powerful participatorial effect of loyalty, collectivity, and psychological ownership potentiated by the shared technical project of work across the proprietary divide between capitalist and worker, employer and employee, owner and manager. In implicit and individual ways and with an underlying sense of company endurance, employee's faith in the future of the company was fostered by closeness of owners to the management itself and kindled implicit agreements to lifetime employment.

As the category of management has expanded across the course of the twentieth century to include technical as well as administrative functions, most middle managers have become workers with very little protection, and the study of their subjectivity remains under-explored (See Figures 1 and 2).

The study of psychological ownership among salaried industrial managers explores a gap between the traditional locus of collective power in workforce solidarity and associated with labor and the traditional locus of individual power in economic property, associated with owners. Managers, as a uniquely visible group of workers, are protected by neither unity nor property and most subtly inhabit the contradiction of psychological ownership at work.

"Ownership" in workplace reports. As well as finding the metaphorical notion of psychological ownership to be an ascending term in the social science and business literature, I discovered its discursive use in the privately owned gear manufacturing company I studied in 1998. Among managers the notion of ownership as a personalized sense of responsibility and pride was widely in use while the possibility of employee economic ownership of the company was never discussed.

Members of the Process Improvement Team, convened in 1998, conducted interviews among front-end managers and described a crisis of ownership among them in team reports. They tied this to organizational changes in recent years associated with the 1996 dissolution of the Manufacturing Engineering department and the more recent 1997 reassignment of pricing work from Application Engineers to a new Marketing elite. Within this discourse, they used the notion of ownership with a range of meanings, though none to depict the financial relationship of legal property.

One described "owners" and two others "ownership" associated with particular tasks and forms.

> The current functional roles and organization do not provide an *owner for the entire preengineering process of quoting and order entry*. The *owner of the quote document and its content* is not a single person. *Many owners* exist and therefore timeliness and quality suffer.
>
> Cradle to grave *ownership of each customer order* is needed... Accuracy of specifications, and PO [purchase order] requirements will improve because of *visible ownership*...
>
> There is *no clear ownership for the selling/order entry/order management processes*.... Layers have been added to what individuals used to handle on their own... A sense of TEAMWORK needs to be restored... (2 numbered) forms are too often incomplete and/or inaccurate. The responsibility, or *ownership, of these forms* is unclear...

Using "ownership" as responsibility or pride of accomplishment, two authors identified ownership as a quality of its own rather than emphasizing its object. One contributed, "Order entry: *lack of ownership*; need someone responsible for order from start to finish... now there is *no ownership* and the customer suffers." And another:

> There is absolutely *no ownership or pride of accomplishment* generated by the present organization. The Sales Force finds the job, Marketing decides whether or not to quote it (absolutely ridiculous), the Technical Organization costs the job, the Marketing Dept. prices the job, and the Sales Department delivers the quote.

> Enough handoffs to create *no ownership* and to guarantee non-optimization of people resources.

Finally, flow charts and organizational charts presenting proposals for alternative process designs were described as a model which "... *creates ownership* and gives both responsibility and authority to the product leader to put resources where and when they are needed."

In 1998 Process Improvement Team reports, ownership was likened to a range of meanings from pride of accomplishment to assigned responsibility for a particular task, object, or process—from the psychological to the organizational. Further it named a range of objects, depicting a cognitively complex cultural space of activity. While the concept of ownership in a psychological sense was clearly in use among these texts, it was not simple and depicted a highly contested space of work. As managers anticipated corporate and owner actions upon their place of work in 1998, I saw psychological ownership as at issue in this company from the start, which is what compelled my investigation of this question there.

PARTICIPANTS: A HISTORY

"My company died the day the old man passed away"
(12/23/99, telephone interview, Manufacturing Engineer).

In working toward a theoretical untangling of conflicting notions of ownership—proprietary and psychological—I traced their tangled course in a gear manufacturing workplace as their oppositional potential in cultural terms was exaggerated by radical changes in company ownership, leadership, and agenda. I explored a collision between two very different kinds of ownership at work—the financial and the functional, the bought and the made, the proprietary and the possessive, the economic and the biographical, money and machines. As the financial entity and the productive entity became increasingly polarized, the business became radically separated from the place of work itself. In contest were the proprietary and psychological owners of this workplace (See Figure 3 for Workplace History Summary and Figure 4 for Workplace Map).

Regime change. The structural fracture between psychological and proprietary ownership occurred at the institutional level, in the gradually changing structure and radically changing occupancy of economic ownership, as the company was first subsumed to a financial parent board in 1986 and then suddenly inherited across owner generations in April of 1993. At the factory studied in this dissertation, the relationship between psychological and proprietary ownership changed in historical proportions over the final decade of the century, as they became fully uncoupled across 2nd and 3rd generation owners in 1993. The radical uncoupling of economic and psychological ownership across company owners and its relationship to the corporate restructuring of the workplace itself underlies the story told here.

The transformation of legal ownership reverberated throughout the workplace organization as a widening gap between the financial and technical ends of the business across the decade that followed. The company after 1993 was characterized by an extreme divide between a continually changing yet consistently new executive management (President and Vice Presidents)—and the managerial and labor force, with no less than a decade of company service, experience, and technical work behind each of them. In contrast to the 2-4 year tenures of the corporate staff by 1998, company employees had no less than 10 years behind them and most had been there for 25 years or more.

The death of the 2nd generation owner and the rash of losses that ensued set a crisis of company identity into motion, as lifelong careers faced the possibility of their early end. The historically changing relationship of owner to workplace in 1993 catalyzed massive changes in the organization whose consequences included the disempowerment of company middle managers and the reduction of their functions to itemized tasks associated with administrative and supervisory duties.

The 2nd owner's early death marked the onset of a qualitatively new style of corporate ownership including the elimination of the company president (since 1986) by April of 1994 and the rapid disablement and demotion of Vice Presidents and department leaders appointed in the 1970's and 80's. Almost every member of the 2nd generation owner's executive staff was eliminated and replaced by 1995. By 1997, the executive staff consisted of a President of four years total tenure, five Vice Presidents imported from the new President's former company, and only one "inherited" Vice President, appointed six years earlier by the 2nd generation owner.

Such rapid and complete turnover of senior leadership had never occurred before in the hundred-year history of the company. After the sudden and unexpected death of the 2nd generation owner in 1993, though, leadership turnover was executed twice in rapid succession within a single decade, as a new style of ownership was implemented. From 1993 through the end of the century, short-term presidents were appointed only 5 years apart in 1994 and 1998, and later again in 2002 from the growing cadres of professional company presidents or "turnover artists"—a rising class of educated venture capitalists in the business world. Company presidents, hired by a 3rd generation owner schooled in finance rather than industry, came from outside the tradition and workplace of the company and hired their own "senior staffs," replacing inherited leadership with newcomers to the workplace and to the industry of gear manufacturing.

Disconnected from the work at hand, new leadership operated under short-term pressure to have a dramatic financial impact. Despite the 26-week-long production cycles and 7-year-long market cycles associated with the gear industry overall, and despite a slump acknowledged in the industry by all, the executive goal was rapid consequence to the bottom line with minimal new capital investment. Over the course of two 1990's company presidents following the death of the 2nd generation owner, new corporate strategies including customer-focused business strategies and market-based financial ideologies were implemented upon the workplace, itself already a relic of many pasts. Eliminating what had come before them, newly appointed presidents and vice presidents rewrote the company in increasingly corporate terms across the decade.

Executive agendas. Articulated "senior management" goals spanning two 1990's company presidents were for the company to become 1.) customer focused (the agenda of

the company president from 1994-May 1998) and 2.) market oriented (the agenda of the president who replaced him from June 1998- July 2000). These notions also provided the primary paradigm goals of the Process Improvement training workshop described in this study. Underlying both customer and market based agendas and consistent with corporate trends toward process standardization rather than specialization across American workplaces was a critique of the company's historic "job shop" mentality or technical "gear-head" approach of making the highest quality one-of-a-kind parts and units.

Managerial agendas pursued in this company across two presidents in 1998-99 were rhetorically consistent with each other and with corporate trends in business and industry widely explained and understood as responding to changes in the larger economy. Still, there were important contradictions in the shift from a customer-oriented to a market-based approach, as past customers were excluded from future production plans, based on profitability assessments, market re-orientations, and factory redesigns.

Agendas pursued alongside the customer-oriented approach taken by the first new president included accounting prioritization, electronic decision support technology, and product standardization. Financial "bottom line" concerns displaced technical priorities of quality and reputation as the primary barometer of company success as the administration sought to standardize products across customers through new marketing strategies rather than making one of a kind gears for one of a kind jobs. Technologies were implemented and enhanced for making production more administratively available as electronic data for planning, forecasting, and financial purposes. Corporate spending across the tenure of the 1st new President's administration focussed on planning, on the front end of the business, and on computer technology, as in many other companies across the late 1980's

and early 1990's. Among the capital investments made by the 1994-1998 president were enhancements and updates of the inventory control and production data management system (an incomplete version of MRP); implementation of a company-wide internal electronic mail network in 1995; and the implementations of new tooling, including electronic 3-D engineering programs at the technological cutting edge. These were redesigns of electronic administrative and technical space.

Business trends associated with the 2nd new president's market-based agenda transitioned from those above to market specialization, process globalization, and service orientation. Targeting particular domains of specialized application, the 2nd new president designed focused factories in corners of the facility to secure certain markets as well as reduce the workplace to sellable asset clusters of machinery. As capacity was redistributed in the factory, processes within the production stream were increasingly outsourced to vendors far and near. Finally, the 2nd new president instituted a shift from manufacture to repair, aligning the oldest business with the newest trends of a service based economy.

The professional profiles and learning histories of the post-1993 upper management, president, and 3rd generation owner were in great contrast to the bulk of the salaried managerial workforce. While the upper management throughout the 1990's were unstable and continually new with no more than 5 years tenure in the workplace itself, the company's labor and managerial workforce was characterized by an extremely long tenure on the job; a deep historical knowledge of product and place; highly developed technical expertise; and a loyalty to the reputation and history of "our company"—a

tenacious and committed sense of personal ownership. They comprised a core, the old guard, protecting a disappearing culture of work.

Old and new. The executive group in 1998, five years after the 2nd generation owner's death, was the first management team of the 3rd generation owner. Members of the new executive staff were outsiders to the company and insiders to each other, having shared time working in another company before moving to this one. They constituted a kind of competing team to the historical collective of long tenured employees, who associated them with the product and reputation of their former company and with each other. They comprised a professional managerial elite among a company of intense experiential scientific technical knowledge as well as enduring remembered social history. Their generic managerial and administrative approach conflicted with the culture and the history of the factory.

As veteran Vice Presidents and department leaders were demoted and the technical and administrative ranks of the managerial workforce rearranged in the Novembers of 1995, 1996, and 1997, leaders across departments became managerial employees, reporting to newly hired Vice Presidents of the "senior management" elite. Engineering product managers with 20 and 30 years on the job were systematically reassigned for having or lacking college degrees. The professional esteem once associated with years of experience was formally revoked, as new educational requisites were implemented as a basis for job reorganizations in the "front end."

Tenured members' job titles, reporting structures, and organizational departments were fully rewritten and reassigned between 1994 and 1997, effecting radical demotion for some, ambivalent promotion for others, and internal relocation, redescription, and

insecurity for nearly all in an organization of rapidly changing departments and positions. Foremen became Supervisors; Design Engineers became Product-line Managers; Dispatchers became Buyers (purchase-parts planners); Expediters became (manufacturing) Planners, and technical managers from Manufacturing Engineering were dispersed across departments including Planning, Quality, and Application Engineering—Manufacturing Administration, Engineering, and Sales.

The appointment of outsiders to the senior management team in 1994 and 1995 and the corresponding demotions and eliminations of the internal leaders they replaced marked a change from the company's historical tradition of technical leadership and experiential seniority. It signified the shift of the corporation toward a generic financial and managerial agenda—a socially, historically, and technically indifferent approach. New and old were divided here essentially, fundamentally, definitionally by power vs. tradition, by differential relations to economic and psychological ownership.

In early 1998 the new company president gave monthly presentations about relative market share, return on investment, corporate financial measures, and profit margins to whole assemblies of veteran managers and shop floor workers. Using PowerPoint projections of corporate goals and pie charts to represent the market and the company's share within it, the President updated all employees monthly about their company's relationship to its competitors and customers and, by implication, to its corporate owner as well. While no moves were made toward employee ownership, employees were instructed in the considerations, concerns, and language of economic ownership—the corporate abstraction of the business from a financial point of view. This contradiction was never discursively acknowledged.

Coming to terms with the language of the new upper management in 1998, employees described a lack of reciprocity, as the new executive staff remained remote from the technical and manufacturing heart of their business. They pointed to losses already incurred by the new managerial approach—elimination of job titles, reassignment of work, and disintegration of departments as well as alienation of customers and the degradation of quality in the work. They articulated the threat such a generic perspective posed to the highly technical, extremely costly, and potentially dangerous project of gear production. They expressed concern for the survival of their company as for the future of their work.

Members of the new upper management in 1998 described their own inability to penetrate the workplace as a system of practice. They were particularly concerned with the reactive culture and practice of order expedition in the shop that seemed to persist despite the recent "successful" implementation of MRP technology enhancements among the newly constituted and newly reorganized department of Planning.[1] Though they described the need for integration between the new and the old, they had arguably achieved the extreme opposite in many respects. The gulf between old and new had grown across the course of their four year tenure since 1994, as the new president had demoted former vice presidents and department leaders and replaced them with his own imported staff, a process called "cloning" by workplace members. Rather than complementing the historical, experiential, and technical workforce, the executive staff comprised an organizational layer on top of it, from which they had deposed and demoted

[1] See Scribner et al. (1991, 1992) for extensive discussion and definition of this technology and its entry into the manufacturing workplace through technology implementations of the 1980's.

the native leadership while necessarily, and inevitably, relying upon it in the daily course of production.

Front and back. While new and old—as upper vs. middle management—constituted an acute polarization in the workplace, it exacerbated underlying operational divisions already active in the manufacturing workplace, transforming functional differences of perspective among middle managers into deep divides of practice and thinking. New conflicts between corporation and company (new and old) exacerbated those already in place including the traditional conflict between labor and management. Most radically, it forged an operational fault-line within the managerial workforce between factory and office, back and front, the technical and administrative goals of the work. The divide between front and back mapped powerfully though incompletely onto the traditional split between management and labor, administration and work, but it was an intramanagerial split rather than one across the wage-salary divide. In fact, among its outcomes was a renewed unity between managers and machinists, as the battle lines for both were redrawn in terms of the new executive staff.

An extreme division between old and new interrupted ongoing historic contests already in place. The corporate and financial restructuring of the company exacerbated economic, ideological, philosophical, ethical, cultural, and practical differences between work and business and more locally between production and planning—back and front. Originally diagonalized in the architecture of the factory's encircling firewall, the shop/office axis became polarized by organizational restructuring and architectural rearrangments, including extensive departmental retitling and employee relocation. In the corporatization and financialization of this industrial workplace, the deep divide between

old and new effected a widening chasm between work and finance, between activity and its administration, and between company and corporation, the past and the future. A cultural divide between corporation and company, as the very gap between economic ownership and psychological ownership, emerged alongside the course of electronic advancement and alongside the polarization of prior cultural divisions of work identity already in place—between management and labor, and intramanagerially, between front and back.

Corporate initiatives in 1995 included the cubicalization of the entire front-end workforce previously grouped in open area desk clusters; the consolidation of factory and company full-service lunchrooms into a single centralized cafeteria; and the reorganization of managerial departments across the front/back divide of office and shop. Most notably in the 1998 organization of work, the technical end was internally de-institutionalized while the administrative end was formalized and expanded. This change was implemented architecturally, first of all, in the redistribution of workplace members across a front/back divide as the side office near the factory was eliminated as a working location in 1995, and then it was implemented organizationally in the redescription and elimination of departments themselves.

In 1995, Production Control was renamed Planning and relocated from the side-office off the factory floor to newly installed cubicles in the front office area, alongside Engineering, Sales, Information Systems, and Finance. As Production Control "expediters" and "dispatchers" became manufacturing and purchasing "planners," Manufacturing Engineering was fractionalized into job functions, and individuals from the ME department were reassigned across the reporting trees of the workplace in

November 1996. As the side-office was eliminated from working territory, its members were radically dispersed across departments, separated, reassigned, and relocated across the cubicle maze of the front office.

The front/back divide was materialized in the new use configuration of the building—a generic, dualistic, and linear model of work that eliminated the triangulating side-office area as an operational center. The struggle between front and back was boldly evident by 1998 and its history could be traced through departmental changes over the recent years. Between 1995 and 1997, these included the elimination of Manufacturing Engineering, the expansion of the Planning department or Manufacturing Administration from what had previously been Production Control, and the instatement of a new Marketing department. The transfer of power in the administration of manufacturing from the technical department of Manufacturing Engineering to the clerical department of Planning was concurrent with the Planning transformation of the American workplace across the late 1980's and 90's. It dovetailed with the rapid technological transformation across manufacturing industries of MRP-style electronic planning for a so-called Just-in-Time market economy.

The ME department was organizationally invisible by 1998, remaining only in the voices of its former members. "...until last year when they disbanded Manufacturing Engineering and made us all Planners..." (Work history interview, 7/16/98, Planner, previously Manufacturing Engineer). In 1996, those previously sharing the side office space were relocated to totally disparate areas and locations of work and isolated in different reporting trees. Half of them were routers who then became re-assigned to Planning. Those who did tool programming were reassigned to Quality (then part of

Engineering), and those who did cost tracking were reassigned to Application Engineering (part of Sales).

As Manufacturing Engineering was radically eliminated, Production Control, renamed Planning, grew. Alongside administrative technology enhancements and the formal institution of Planning in 1995, former Production Control clerks—expediters and dispatchers—were relocated from the former side office to the front. Renamed planner-buyers by 1997, they were expected to plan whole product lines from start to end rather than managing levels of the manufacturing process such as component planning, vendor planning, and assembly planning. "It used to be from engineering, the order went to ME, tooling and process. Now it goes to planning and 'noone knows till it hits the floor'" (Fieldnotes of interview with tooling supervisor, former member of Manufacturing Engineering department 6/30/98).

Once in the front, Planning—combined with Purchasing and closely linked to Finance—was held accountable to the interests of sales and the politics of price. Alongside corporate priorities of marketing and pricing, Planners were held accountable to shipping dollars and prices rather than production constraints and costs. The dispersal of the Manufacturing Engineering department effected a loss of technical influence in the administration of production, while the factory was run by an increasingly sales-driven Planning agenda. "Well, now I, I've been here, I used to work in the shop in inspection. In receiving inspection. I left the gear lab to come into this. Actually I left the gear lab to come into the technical end" (Pre-workshop interview, June 1998, Manufacturing Planner, previously Manufacturing Engineering).

With the elimination of ME as a department, its goals were re-described as itemized tasks, already associated with particular individuals, who became reassigned and distributed widely across the range of reporting trees on the organizational chart. Cost tracking practices became ad hoc with the elimination of the Manufacturing Engineering department and its reduction to itemized tasks. Though its former members continued to track records of late delivery, material unavailability, and overtime excess on their own, so to speak, systematic cost analysis was de-instituted as an official company endeavor. "Without ME/IE (Manufacturing Engineering/used to be Industrial Engineering), who did process measures, Manufacturing (including Planning) is being judged on sales dollars, even though they have no control over this. And no one is dealing with cost. This was clearly the domain of ME/IE" (Interview fieldnotes, 6/30/98, with Manufacturing Supervisor, formerly Manufacturing Engineer). Governance of the shop was reduced to grievance battles between Shop Stewards and Manufacturing Supervisors (previously called Foremen) mediated by a department of Human Resources (previously called Personnel), comprised exclusively of new (since 1993) executive staff.

By late 1997, a newly named and instituted Marketing elite was assigned to oversee Sales. They were to determine prices and profit margins as well as to negotiate between the century old company and its customers. Organizationally, individuals with histories in the technical domain of Internal Sales who had previously handled price inquiries and negotiated directly with customers and outside sales representatives were replaced with newcomers lacking technical, social, or historic workplace knowledge. No longer were product specialists and engineers in direct contact with the customer or with outside sales representatives. This involved proceduralization in both ends of the work,

but differentially effected elevations of status and salary among the new, i.e., in Marketing. With the implementation of the Marketing department, the process of delivering order quotations in response to customer inquiries was broken into costing done by insiders (Application Engineers) and pricing done in Marketing by the new. Application of profit margin became increasingly customer- rather than product-based. Rather, their information was mediated through the very narrow corporate funnel at the top. The intervention of Marketing in assigning profit margins to costs assessed by technical insiders exacerbated a division between the technical and the commercial aspects of the business as well as widening the information gap between customer and producer.

In this workplace, the underlying division by 1998 constituted an integrative failure between front and back, the financial and material ends of the company, mapped increasingly into the physical place and organizational structure of the workplace, into an architecturally and electronically reinforced separation between office and shop. The polarization between front and back in this company emerged over time, exacerbated by the tensions between old and new, the technical and financial ends of the business. By the mid-1990s the division between corporate administrative approaches and company production priorities was embodied in the extreme discrepancies in company tenure of those who represented them.

Among the effects of this division was a high rate of late deliveries in a business climate increasingly focused on on-time performance. Despite declining demand, orders were routinely, even reliably, late and customers were as likely to be blamed as anyone.

> One foreman describes a job where a customer called and is very angry, sounded like a regular customer, because the foreman said, "I've never heard him so mad.

> He doesn't understand why it takes so long for us to get a run through." The test and inspection foreman says, "I'll give you (1 person). (The Vice President of Manufacturing) says "a loaner from Assembly is the best for this, in terms of skills." The foreman comments that he never heard the customer so angry, and (VP of Manufacturing) comes back with "does he understand we had to re-pipe it?" "Yes." "Well, if they'd given us the right drawings in the first place." (Fieldnotes, Production Meeting, 7/6/98).

In 1998, excessive rework and late delivery were symptoms of a growing gap between front and back—an emergent polarity of effort in the workplace between the administrative and the material, the plan and the execution.

The cognitive, technical, and social history of work was overlaid by the polarization between administrative and manufacturing concerns, as the Manufacturing Engineering department radically eliminated and the Production Planning department united with Purchasing and moved to the front near Finance and Sales. The previously triangulated architectural and organizational traffic of the workplace was reduced to a singular and total divide by the bifurcation of front and back whose consequences were best seen in the conflicts between formal systems and systems of practice.

Formal systems. Underlying practice in identity and even in design, the workplace was a job shop, making one of a kind items in one of a kind ways, one at a time. The company's participation in an industry of heavy and skilled machining entailed long production and purchasing lead times, complex assembly and testing procedures for products, and varying risk factors in terms of production cost and quality issues. Their work involved high rework rates, long process times, and sub and final assembly of multiple complex and highly technical pieces (often up to 75 or 100 parts per final assembly). These factors posed challenges to any abstraction or planning model, and

required coordination and precision of timing, as well as feedback from actual performance such as shop reporting.

By 1998, the company suffered from a lack of fit between its administration and its production as well as between its formal representational system of information and the empirical realities it presumed to describe. Technology and process changes over the decades, including new engineering design software and shop floor machine replacements as well as lost personnel, resulted in discrepancies of detail and specification between electronic representation and functional operation whose consequences were often unseen and undetected until the final product test.

As computerization enabled, manufacturing industries became increasingly oriented to planning through the use of formal administrative systems and decision support technologies such as Material Requirements Planning (MRP) across the late 1970's and 1980's. At this company, the MRP software had been enhanced many times, first linking material usage to job execution, then inventory to production plan, and finally in the early 1990's, production planning to finance. Inventory and production tracking was computerized in this workplace by the early 1970's, linking the shop floor to manufacturing administration through the data structures of machine locations, process sequences, and job times, all associated with a prior piece-work model of labor. Job time standards were erased from the system with the conversion from piece-rate to hourly wages in the 1980's, and alongside massive workforce reduction in 1987, this shop floor system was interfaced with new material planning and finance modules. As its domains of application expanded, so did its user base.

The factory itself was radically reconfigured in 1991 in the 2nd owner's final bid toward modernization before the company's centennial year. As machinery was relocated, and work rules further redesigned, the workplace signified in the software changed, and the data structures reflected a prior arrangement of work. Planning and launching an order came to entail editing every routing—the map to an order's path through production—to reflect current machine locations, workstations, and process sequences. The computer system itself became an object of considerable labor, as former Manufacturing Engineers reassigned to Planning were tasked with editing its routings and correcting its past.

Planners had personally tailored menus to reflect the areas of their practice and the product lines of their concern. "THE REPORTS I USE ARE BOK013, BACKLOG REPORT RUN BY REVENUE ACCOUNT, EGC040, AND ALL PLANNER REPORTS FOR MY PLANNER NUMBER" (Response to email research survey of system use, 6/19/98, Planner, emphasis added). In fact, no two managers used the system alike, and despite its presence as a potential shop floor tool, its use by machinists as a labor-reporting device was minimal and was not enforced. "We all use (the system) for our own individual purposes, but it really is not a tool for the company" (telephone interview, 11/15/99, Manufacturing Engineer, emphasis added).

Complicating the isolation and diversity of system use was the fact that the operating goals of the workplace were conflicted and contradictory. The governing company metric of monthly shipping dollars promoted expedition of high dollar items and high profile jobs, introducing drastic instability into the production schedule at the very same time as the MRP implementation and enhancements aimed to rationalize the order control and production scheduling process. While job titles shifted from the

reactive language of Expediting in the 1970's toward the proactive language of Planning in the 1980's and 90's, doing a good job for planners was measured in shipping dollars rather than in shipping on time or delivering in compliance with their plan. Activity on the shop floor did not reflect the plan, and similarly the plan did not mirror, represent, or direct the production reality.

> ... We're not necessarily prioritizing the work in the shop the way the weekly dispatch reports say they should be, okay, and that's a problem that goes much deeper than the scheduling problem 'cause that's a discipline problem that says, "we're going to prioritize the work the way we determined in yesterday's production meeting." (...) The quote foremen, and we really don't call them foremen anymore, the planners and the foremen are sort of agreeing among themselves how to prioritize the work, okay, superceding the schedule. (Transcript of work interview, 7/98 Buyer/Planner).

Production planning became erratic and reactive as near-sighted expedition strategies—transmitted in paper notes and by word of mouth—corrupted the success of long-range plans and order commitments. The increasingly sales-centered and price-based orientation of Planning had exacerbated a historic culture of expedition, while disrupting their collective achievement of it.

The system was manipulated in order to accomplish immediate ends rather than being integrated into long-term strategic production plans. An order not even planned the week before could already be late by the time of its appearance on the printed sheet. A due date for shipping of a part could be "scheduled'' in the past in order to expedite the production or purchase of the parts required to make it and in order to advance its priority among a shop floor of competing orders. Describing a typical example, one planner explained:

> (A planner) goes out twice a day to prioritize work that could be low on the list. As you get further down the process, (you) have created overlapping priorities. The real danger is you've taken a machine center, infiltrated it with priorities that

> aren't even on the list, so the next run will look the same because none of that work got done. (Fieldnotes of work interview, 6/26/97, Planner/Buyer).

Reflecting the tenacity of past practices as well as their corruption, employee acts reflected goal conflict between schedule integrity—the management of demand across capacity—and monthly shipping requirements—the dollars associated with particular customers and jobs. These contradictory goals were manifest in planner manipulations of the MRP system between weekly schedule publications that resulted in extreme transformations of production priority from week to week. They also contributed to a workplace wide crisis of planning, stability, commitment, and projection of activities, manifest in the total company problem of on-time delivery.

Informal systems of practice. As the theory and technology of manufacturing management increasingly diverged from the experiential reality of the company, practices evolved to compensate for this gap in the form of workarounds to the formal system. These workarounds were constituted by the informal practices of the workforce—the compensatory document systems that subverted and bypassed the formal system and its plans. Entire informal systems of practice interlaced with the formal planning system. Though the primary planning tool in the workplace was the electronic Product Data of Management (MRP) system, its use was extended, mediated, and subverted by the unofficial productions of paper work, lists, and notes. Compensating for the formal system and woven into the practice of its use were preventive elaborations and documentary practices that crossed the very boundaries that the system generally supported. In fact, it was through these suturing artifacts that the misalignment between the formal system and the system of production was best seen.

The most prominent social practice in place to knit back and front together was the production meeting, where notes of all kinds were updated and memos issued. In the "war-room" (Work Allocation Room), planners and shop supervisors met every morning in 1998 and conducted a counterclockwise sequence of updates starting with the Vice President of Manufacturing. Monthly, the head of Planning distributed graphs of the prior month's delivery performance.

Weekly the Supervisor of Facility Maintenance distributed the "downlist" which detailed the status of machine repairs in the shop. Verbally reviewing the status of machines described in his report, he articulated the state of equipment to planners and supervisors in code. "He runs through a list he has on different machines. '1241 is being set up,' etc., machine by machine. 'G&L was done, but it has another problem this morning. We have a rental transformer now, but the other one is at this stage'" (Fieldnotes of Production meeting, 7/6/98). Among 15 or 20 people, the Director of Facility Maintenance was usually about 6th, providing a status report of the relative state of various machines with compromised capacities—a portrait of constraints on the shop floor. In contrast to the machine identification numbers that comprised his review, the remaining discourse of the production meeting concerned the order numbers associated with particular jobs describing the work moving through these machines.

All those involved in daily production concerns, from Planners to Foremen, were updated in the production meeting to return to their respective areas of execution. The production meeting was a temporal boundary space of transaction and distribution, the transfer of both published and spoken information in the technical code of order numbers and manufacturing language. The production meeting provided the basis for the

generation of many departmentally separate tracking documents and some departmentally exchanged and shared key tools. In 1998 planners' pocket notes ranged from single item numbers scrawled on scraps of paper to printed and massively annotated backlog reports and expedite lists.

Among the key documents generated and updated in the Production Meeting was the informal "night-note" passed between night-shift production supervisor and planner each day. From day to night and back again, the unofficial but necessary "night note" detailed the work to be done on the night shift, recorded its assignment to machinists, and remained its only true account. "His (the night shift shop supervisor's) work emanates from the night note. It's rare he'll go beyond the night note... He's only judged against the night note" (Telephone interview, 8/16/99, Manufacturing Engineer). The night note served to seal gaps across otherwise uncharted time—to generate the continuity between night and day and from one day to the next.

A daily paginal production, it was dialogic and temporally layered. The night note was reproduced each night from scratch as a handwritten 8"x11" sheet of yellow legal pad paper, passed from one pen to the next—from planner to night shop supervisor and back. Its formative textual process was encoded on the page through marking complexities of authorship that the electronic system could in no way absorb or convey. Written by many hands, it accumulated a complex set of signals, including differentiated pen colors as well as page, column, and line locations. Handwritings as gestural fonts coded authors as well as processes and time, tracking the transformation of plan into action and record. The night note was produced so consistently, so conformingly from one day to the next that it could have been electronically automated or published as a

standard form, and yet it was not. It was decidedly informal, practice rather than procedure, like many of the preferred ways of doing things. It kept the night on paper and in hand, and it kept the system in the dark, in a way.

Intimate daily comparison with the day before, an embedded ability to notice what was missing and what was needed, was the skill used most by roving planners in their daily practice of information gathering and distribution. Fieldnotes from July 6, 1998, for instance, describe a planner (formerly a shop floor supervisor) tracing a "deviation" in the expedition of a "rework" job, crossing the architectural border into the factory and back to the front.

> I am walking through the shop with L as he makes his morning check of jobs on the floor—their progress and delay. He stops to check a deviated job at an inspection station. He says he sent the deviation on July 1 and it could be awhile before he gets it back since H who processes them is on vacation and so on. L writes it on a sheet of scrap paper in his shirt pocket so that he can track it down. He says it must be on somebody's desk. We check the desk of quality assurance (not a person's station, but an inbox) and then we check H's. L finds the copy on the Quality Assurance desk (he is chasing the original), and nothing on H's, but then he says I'll check back with H. I say, "I thought you said he was on vacation." "He's here," L says, "there's his coffee." And there it is—a thermos and a steaming cup. (Fieldnotes, 7/6/98, shop floor tour with Planner, formerly Manufacturing Supervisor).

Like texts, objects conveyed messages. Belongings spoke.

Machinists, knowing which planners would pass by and when, checked off jobs as they were completed and left their work visible. They marked the progress of each job on their own page of the "run," a computer printout of the entire work floor plan distributed every Monday to foremen and further distributed from there to machinists at their stations. They made notes in their own toolbox books for themselves and left instructions in machine cabinets for those who would follow. Machines accumulated diagrams, hand-

drawn sketches, labeled notes, and corrected blueprints for those who might ultimately need to know.

Across the workplace, employees used tools and lessons of the past to generate and ensure the continuity of work itself. Informal practice was fundamental to the processes of work being done as gestures constituted signatures and pathways comprised investigative webs across the facility. Authorial productions of all kinds guided this workforce in their sustained daily efforts to make every day part of an ongoing century of work. Texts mediated across temporal and departmental boundaries in the workplace.

The mix and distribution of authorial practices reflected a technological history of changing media and an extensive documentary culture of practice involved in the complex relay of orders across jobs, work across links in a chain of people. As the order moved from customer inquiry to quote and order entry (including engineering-based cost and price assessments by Application Engineers) to planning to engineering to set-up (CNC programming and tooling plans by those formerly in Manufacturing Engineering) to production to shipping, it met the customer on both ends. Continually advancing a process in motion was a generations-old circuit of doing the work.

The hidden organization of work. After five-foot high cubicle walls were erected between desks, individuals were relocated, jobs re-titled, and work reassigned in the organizational reconfigurations of departments in November 1996 and November 1997. While managers' desks had become increasingly isolated, their computers became electronically connected. Afforded by the changing history of technology in the workplace, the result by 1998 was an invisible historical social and informational infrastructure of expertise and practice. Underground, in the electronic communications

network, a human system of hidden social practice survived, a network, a workplace from the past.

A prior organization of work underlay the present, including departments that no longer existed. In pre-workshop interviews, it was always just behind the next question. When asked, "What's your job? What do you do?" interview and workshop participants often answered "now?" Both backdrop and entry point for the speaking self, "before" was right behind the present—available and invisible at the same time. In early interviews in the summer of 1998, "used to be" pervaded references and descriptions of practice, responsibility, organization, and job, revealing a past that was no longer organizationally real. "I'm part of the M. E. department. Well, I used to be when we had an M. E. department" (Group A, Workshop Day 1, participant self-introduction, Manufacturing Engineer/Planner). With company careers of 10, 20, and 30 years each, the past provided a ground against which the figure of "now" in the 1998/9 workplace was distinguished, upon which it was described, and on which its experience seemed to expressively depend.

The past survived in spatial, textual, and vocal landscapes as its meanings and memories found their way into "now" and into the intimate commemorations marked on the verbal path of expression. Among such intimacies was a nickname, by which the workplace was often called, X—y Gear—a collective syllabic invention, a name like a friend's. I heard the nickname of the workplace in 1998 as a way to mark a time before, and its expression as born of a need to claim their place and to commemorate their history in a prolonged time of loss. I saw this nickname as enabling a meaning whose cultural necessity was incurred by the company's subsumption to a parent corporation in 1986 and precipitated by the sudden transfer of company ownership in 1993. I saw it as

reflecting a cultural and historic tension in the identity of company membership and workplace belonging.

This was a tension exacerbated by the proprietary history of the company itself and played out most acutely between continually new upper managers and the factory-identified long-term middle management and technical workforce of this workplace, respectively representing two different company owner generations. I heard this nickname in 1998 as a boundary sign marking a space created by the increasing gap between the corporation (marked by XGC) and the company (marked by X---- Gear), between the financial front end and the production back end, and between the future and the past. I heard it as precipitating the place itself, this particular location of work, their workplace, as it had once been, and interpreted it as social glue.

Rather than the initials by which the company name was typically condensed in print, formal documents, and logos across its history, this nickname became the electronic mail address of the company's every managerial member, networked and cubicalized in 1995, --@x—agear.org. While the aural nickname signified the factory, the place, this unique location of work (x—y gear), its formalization as address marked a corporate appropriation of historic workplace culture by the suddenly new executive management after 1993 (x—agear). Reifying this term's use among the long-term managerial workforce, "x—agear" signified a semiotic twist of the company's own past. Outside of the corporate eye until October of 1999, the managerial workforce colonized the electronic space marked by this address and resurrected within it the work itself.

Job titles and work categories. Alongside complex intracultural divides among corporation, company, and factory and more traditional divides among owner, management, and labor, this workplace was characterized by intramanagerial fractures between office and shop (front and back, the administrative and technical ends of the managerial workforce), as well as contests between incoming and long-tenured workplace members, new and old.

Cultures of work in actual workplaces break down into many different functional subcultures of cognitively, socially, and practically in common groups that may or may not map directly on to current organizational clusters or departments. Insofar as they did not in this company, they seemed instead to reflect divisions from the organizational past casting shadow boundaries of a time before.

In exploring identificatory boundaries in workshop participant writing and workplace ethnography, I operationalized these institutional tensions and intramanagerial divides as ex post facto subject variables by which to analyze possessive expression in workshop activity based writing. I compared managers' possessive expression in workshop writing by the dimensions of company tenure (old vs. new) as well as by job category (front vs. back)—two axes of cultural tension, products themselves of the history of work within this company and more generally across American industry.

Categorization of company members by organizational chart job or department titles was insufficient to describe the work of managers in the company because of the semiotic instability of these terms across company presidents. That is, while job titles and work locations were in continual flux, the activities of work with which managers identified seemed to have a much longer and more stable history. Because of the

instability of job assignments and department names across reporting trees of the company org charts from 1998 to 1999, I did not carry these department and job titles directly into my analysis of the writing data across job categories. Instead, I used a set of managerial job-activity or work categories of a more functional, social, and historical kind. These categories of work were derived ethnographically and considered underlying histories in the workplace, describing the activity with which participants identified rather than the departments to which they were ongoingly reassigned.

The derivation of this set of work categories was ethnographic. I used my knowledge of their company and of their job histories, as well as studying the organizational charts that described the company in 1998 and 1999. I derived work experience groups in such as way as to account for both the old / new and front / back divides as dimensions of work history, experience, and status.

I arrived at five job category groups: Manufacturing Supervisors, MS (formerly Foremen); Technicians, ME (formerly Manufacturing Engineering, now widely distributed); Application Engineering, AE (formerly Internal Sales); Design Engineering, DE (product design); Planning, PL (Manufacturing Administration, formerly Production Control); and Vice Presidents, VP (all hired within the previous 3 years). In order to seek statistical correlation between job category and possessive expression, I coded these groups numerically to reflect their relative relations to the back and front ends of the workplace, from factory to finance (6-1 respectively).

Among these, the category of Technicians or Manufacturing Engineering (ME) was devised to account for a set of individuals who until 1996 had comprised a department of Manufacturing Engineering which was eliminated in 1996 by the first post-

1993 president. Since then, its members had been reassigned as individuals across the reporting trees of Manufacturing Administration (Planning) and Engineering.

Individuals described here as Application Engineering (AE) or Internal Sales had also experienced considerable work reassignment and departmental upheaval in November of 1997, as many of their activities, particularly in terms of customer contact, were reallocated and subsumed to a newly formed Marketing department.

Manufacturing Supervisors were renamed from their former title as Foremen in 1994 with the onset of new leadership after the company owner's death in 1993. Underlying this change was a considerable rewriting of the administrative functions associated with the formerly quite technical domain of shop floor leadership.

Design Engineering had arguably been the most protected from change over the prior several years. Their leadership had been from a former generation until 1998, and while their technologies had changed considerably, their jobs remained quite protected.

Meanwhile, Planners had been steadily elevated among the management in organizational terms—moving steadily closer, in a sense, to Finance, arguably the most powerful department in the company.

The category of Vice Presidents was comprised completely of the new and constituted a category that cut across departments.

Participants. I studied managers at a large gear manufacturing workplace who participated in Process Improvement training workshops of 1998-99. Of approximately 140 managers in the company, listed on the single page telephone directory at every desk and laid out on the 1998 organizational charts, 46 individuals participated in the month-long workshops, 10-13 participants in each of 4 groups.

Workshop groups were comprised of employees from across the range of workplace tenure and functionality. Called here group D, the pilot workshop was conducted for two-day sessions each week for 3 weeks in October 1998 and was comprised of formal and informal leaders, including long-tenured managers who were formerly department heads alongside newly appointed departmental vice presidents.

Three more groups, called here A, B, and C, were conducted concurrently for one day each week (Tuesdays, Wednesdays, and Thursdays respectively) across four consecutive weeks in January and early February of 1999. They were similarly comprised from across the range of departments, but reached deeper into the organizational levels of middle management, engineering, and manufacturing supervision. Most participants had worked in the company for 18 years and more, and many had over 25 years behind them. Only a handful had started after the layoffs of 1986, just over a decade before, and finally a few were from the continually changing new upper management executive corporate staff after 1993.

Workshop participants were evenly spread across groups by department. Comparison of the organizational chart locations (See Table 1) of workshop participants demonstrates the shifting agenda across company presidents from 1998 to 1999, the changing structure and contents of organizational departments and the redistribution of workshop participants among them. The workshop was conducted in the context of continual job reassignments as one leader after the next radically rewrote the workplace, as well as employee job titles within it. The representation of departments in the workshop shifted dramatically from Manufacturing Administration in 1998 to Focussed Factories 1 & 2 in 1999, while the workshop roster stayed the same. Where the first

administration determined the target of the workshop intervention to be in Manufacturing Administration (Planning), as evidenced by the high percentage of workshop participants allocated from that department, the later administration's department categories and workshop assignment reflected quite a different distribution of priority through the redistribution of employees. Focussed factories, the smallest and most newly formed working groups in the company, were also those with the highest proportion of workshop participant representation in terms of the 2nd organizational chart (1999). Comparison of the workshop selection's distribution across the 1998 vs. 1999 organizational charts demonstrates the changing use designation of workshop members and reflects the changing institutional agendas associated with the company administrations that started and ended this workshop project.

Using ethnographically derived work categories the workshop groups were comprised as shown in Table 2. Notably, Manufacturing Supervisors were absent as a category from the Pilot workshop group and Vice Presidents were absent from Group C.

METHOD

Research summary. This research took place at a suburban industrial manufacturing company where I studied a workforce and participated in conducting a managerial training workshop in October of 1998 and February of 1999 (See Figure 5 for research schedule). I documented the situation of individuals who were managerial employees of a century-old gear manufacturing company in a 40-year-old workplace and studied the contest of psychological ownership at work both through the events of the workplace and through the process of the training workshop. In order to understand the relationship between psychological ownership and possessive expression, I analyzed the texts of managers participating in a training-workshop who wrote about the experience voluntarily, at my request, and for my research (34 writers / 48 workshop participants / 140 middle and upper managers / 340 employees in 1998).

I sought the picture of work articulated through a projection of participants' verbal objects of possessive expression from a workshop game-workplace activity. I wanted to evaluate this projection as a preliminary ethnographic map of the distributed and shared cultural space of the workshop activity, and to consider its potential as a lens for reading the workplace itself. I used owned words from the workshop writing to frame the real workplace and I used the collection they together comprised as a reading upon it.

I studied the writing of the workshop in order to see what world(s) would become visible through their possessive expression and to see how their real work context became visible through the workshop context as a domain of elicitation and the game as a domain of development. With a background of intense ethnographic investigation of the workplace, I sought the luggage of personal meaning transferred to the workshop game

and traced its cultural and historical paths. Then I hauled this very luggage back to look at the workplace in its light.

Workshop as context of study. I analyzed possessive expression in order to understand narrative ownership as a human expressive phenomenon and to map its developmental progress within a subjective process of distributed cultural appropriation across the course of activity. I used the experimental situation of a training workshop activity conducted with gear manufacturing managers in 1998-9 for the collection of verbal data toward an analysis of activity-based possessive expression, eliciting personal writing weekly at workshop sessions over the expanded schedule of a month. (See Figure 6 for illustrations of workshop activity). In my examination of the language of managers' personal writing about a workplace-like training game conducted at this site, I studied the voice of possession for its development over textual time as well as for its contents and their relation to the activity contexts of workplace and workshop.

In order to explore the value of possessive expression both for developmental study and for the ethnographic mapping of a subjective cultural space, the workshop was ideal. Its controlled temporality as a cultural and developmental situation and as a context of constructive work activity provided a clear, if artificial, beginning in contrast to the century-long history of the workplace in which it was conducted, while its activity, design, and language came from the work itself. Not only was the workshop bounded in a temporal sense, but also it was reduced as a material space compared to the empirical infinity that characterized the historic industrial workplace. Taking place in a single room, the workshop was, if porously, bounded as both a temporal and physical context and space of work, enabling visibility of a working whole. This visibility of a whole is

typically occluded in real workplaces, veiled organizationally by assumptions of what should be, and hidden in practical terms by the larger-than-life physical reality and extensive spatial distribution of most industrial work—characteristics of the workplace that have cognitive and organizational consequences. The workshop game afforded a point of view literally unavailable in the real, and in doing so, provided an arena of collective potential for engaging and reformulating the cultural terms of practice at work.

In contrast to the workplace, the workshop's potential for group redesign, reinvention, and transformation was reiterated at each weekly session of the game as well as being enabled by the material independence of the game as a context for activity; its comparative immaturity and lack of fixedness as a system of practice, objects, and tools; and its relative separation from the real and historic workplace infrastructure. Decisions to be made by participants in the workshop included which markets to pursue, pricing, scheduling, tool development and use, documentary and training practices, company and shop layout, departmental organization, communication and accountability patterns, new product development, production process determination, job description and assignments. Participants were continually advised and supported to change roles from their real-workplace jobs and from their previous roles in the game. Further, all job categories, job definitions, job assignments, organizational structure, and execution practices remained unspecified in advance.

Finally, the workshop schedule extended over a series of weeks rather than days enabled me to pose the question of possessive development of the individual voice and to investigate its relation to activity, including its change over time, its reference to contexts, and its formations of meaning. Based on my previous workshop experiences and on my

study Activity Theory, I thought subjective development of psychological ownership would be reflected in changes of possessive expression in workshop writing across the course of the workshop activity (Kindred, 1999). I hypothesized that the workshop process, as a constructive social and technical activity, would promote and catalyze the development of individual writers' possessive expression, reflecting the cultivation of psychological ownership and depicting belonging across its course. I thought that the constructive and collective activity of the workshop would advance psychological ownership and its verbal expression. Using the workshop process itself as a cultural activity space of work, I examined the developmental progress of possessive expression across the course of activity in the individual voices of writing.

Since the workshop was a miniaturized material simulated game and a modeling of the real, its relationships to the workplace were complex, symbolic, and psychological; and the meanings of referents in writings about it similarly so. I looked at individual expression about the workshop in order to explore the production of linguistic ownership as an expressive vehicle of the working and developing self and to describe the cultural nature and ethnographic value of the personal voice of work. In examining individual possessive expression in participants' writing of the workshop, I tried to understand what objects populate this textual space, what function its production serves, and how its expression—in content and form—changes microgenetically across the course of activity and psychological time.

The workshop was an intervention over time and I wanted to see if it, as activity, affected vocal possessivity or the collection constituted by possessive voices. I wanted to know if the experience would elevate possessive expression and how activity would be

reflected in the objects that it claimed. In considering the developmental significance of possessive expression, my developmental hypothesis was that personal ownership language would increase over time and across workshop game episodes, indicating changing qualities of participation and sense belonging in the game over time. I wanted to know how owned objects were held and whether the workshop made a difference in their presence, whether it promoted the production of possessivity itself.

I studied workshop participants' writing to answer the question of "what world are they in" by approaching the psychological space of activity through a view of possessive subjectivity as grounded cultural action. I examined objects of linguistic ownership in participant writing for their referents and sources in cultural terms. I wanted to show ethnographically what possessive expression would bring with it to the surface of the text and in which directions its objects would point.

In collecting writing data in the workshop context, I thought that subjective change associated with the workshop, an activity effect expected across all but not independently measured, would be reflected in participants' possessive expression over time. Profiling perspectives inside the writing voice over textual time, I mapped subjective horizons articulated through the personal possessive micro-linguistic markers, my and our, and described by the objects they marked in workshop writing. I sought the microgenetic cultivation of psychological ownership—a workshop effect—and traced the source of its content to the experiential and cultural history of the real place of work.

Procedure: Eliciting possessive expression. In the interest of measuring possessive subjectivity within the workshop process, and because of a lack of time between workshop sessions in which I might have verbally interviewed participants, I requested

them to write about the workshop as they experienced it. I studied the pages of those who wrote about their experience at my invitation and research request and sought the textual arisal and development of possessive expression across the course of workshop activity. I encouraged and collected the ongoing writing of individuals who participated in a month-long workplace-activity based training workshop conducted in their manufacturing company so that I could study the microgenesis of their possessive expression across workshop activity sessions. In order to scaffold this process and to support the possibility of personalized or owned speech, my probe, delivered to them in writing as a research request, suggestively contained a high proportion of the possessive pronoun, your.

> A DESCRIPTION, NARRATIVE, EXPLANATION OF *YOUR* GROUP, *YOUR* ROLE IN THE GROUP, *YOUR* JOB, *YOUR* TOOLS AND PROCESSES, *YOUR* INVENTIONS, *YOUR* TRACKING SYSTEMS, *YOUR* MACHINES, *YOUR* PROGRAMS, *YOUR* DESIGNS, THE ORGANIZATION OF *YOUR* GROUP, THE DISTRIBUTION OF ROLES, THE INTERACTION BETWEEN AND WITHIN AREAS OF *YOUR* COMPANY, THE GOALS AND METHODS OF *YOUR* COMPANY. A COMPARISON OF *YOUR* EXPERIENCE ACROSS SESSIONS. *YOUR* EXPERIENCE. EVERYTHING YOU CAN THINK OF. (Distributed to Group A, B, and C participants, 1/29/99, 1/30/99, 1/31/99).

In my own request language I privileged ownership, using <u>your</u> to name possible categories of description and promoting consciously and equally the potential use of <u>my</u> or <u>our</u>. I primed participants in this sense, using the ambiguous <u>your</u> at a high rate of 23% in this text compared to the range of possessive expression elicited in workshop participant texts, in which total ownership markers of all kinds combined remained under 10% of the words in any text. In this stacked deck were fourteen instances of <u>your</u>, spread across 11 different object words whose objects seemed easily recast in either <u>my</u> or <u>our</u> (<u>group</u>, <u>company</u>, and <u>experience</u> each repeated twice). Most of these terms appeared at least once, and some several times, among the workshop owned terms, under the umbrella of <u>our</u> or <u>my</u>, as shown in Table 3.

The pilot group received a different probe from the three simultaneous groups that followed. The pilot group, called Group D throughout the dissertation, received a set of questions designed to lead participants to write ethnographic narrative accounts of their experience of the game:

> Describe what you did within the activity structure of the game workplace. What actual activities did you end up doing? How did you spend *your* time? How did what you were doing relate to the job title you had assigned *your*self, and how was it different? And how did what other people were doing interface with *your* actions? Who did you communicate with in the course of the game and for what? (Email to Group D participants, 10/19/98).

Your was used only 3 times in this elicitation (4% of the total words). Further, this your was used to mark time, self, and actions, objects that connoted a much more individualized reader (my vs. our), and perhaps accounting for the higher presence of my in early writing among some of its members' texts.

Final Group D texts were comprised of seven end writings (for most among them, the 2nd text) generated as responses to a final email elicitation from the Vice President of Manufacturing, also a workshop participant, seeking feedback and evaluation of the training workshop itself. The email read:

> I have to give feedback to the management team on the results of ***our*** training pilot. I need *your* feedback to do this. Specifically can you describe what you believe the group learned. What was good about the training, what was bad? Do you recommend continuing? If not, why not? If yes, how would you improve the training. Can you get *your* comments to me by noon Monday if at all possible. You might also want to send some comments to Jessie, particularly what you believe the group learned. (Email to Group D participants, 10/30/98, 7:29 a.m.).

A similar request was sent to participants of the three groups conducted in January and February as well. It read:

> YOU HAVE JUST COMPLETED THIS TRAINING. WE BELIEVE THIS TRAINING IS A TOOL TO HELP US CHANGE THE XGC CULTURE AND SERVE OUR MARKETS AND OUR CUSTOMERS BETTER. WE NEED DATA TO APPRAISE THE EFFECTIVITY OF THE TOOL. PLEASE RESPOND TO THE FOLLOWING

> QUESTIONS: WHAT DID YOUR GROUP LEARN? WHAT DID YOU AS AN INDIVIDUAL LEARN? WHAT WERE THE GOOD POINTS OF THE TRAINING? WHAT PROBLEMS DID YOU IDENTIFY WITH THE TRAINING? DO YOU BELIEVE THIS TRAINING SHOULD BE GIVEN TO MORE XGC FOLKS? (Email from Vice President of Quality to Group A, B, and C workshop participants, 2/4/99).

Both of these managerial elicitations involved an our as well as a your, and an I addressing a you. In this, the institutional voice seemed to straddle between the individual I and the managerial we, including a possessive our.

Most of the Group D final texts were shared with me by their authors and they were included among the pilot group's data. Meanwhile only one consecutive writer of Group B emailed me his managerial response, and it was included in the analysis. Two unusual texts, one from Group D and one from Group B, were included as well. These were sales letters, written by workshop participants to the customer in the course of the actual game.

Measuring possessive expression. The main problem in approaching the data was to compare individuals, given the variation associated with both total numbers of words and total quantity of possessive expressions. I measured the pronouns of possessive expression, and especially the use of my and our, using a rate calculation of particular ownership pronouns to the total word quantities of individual writers and texts. Ownership rates (controlling for total number of words) provided comparability despite the enormous variation across individuals in the lengths of their writing productions and actual quantities of owned terms. Disregarding possessive content, the rate measure enabled percentage based comparative profiles of possessive and pronominal word use across the texts—across individuals overall and across sessions for serial writers.

The pronoun rate calculation enabled conceptual clarifications in interpretively determining the source of possessive variation as well. Since writing and the workshop compete as potential interventions in this study design, the question of which drove developmental changes in possessive expression arose. If the rate of possessive expression were a function of how much someone wrote, possessive change would clearly be driven by the activity of writing itself, rather than by the constructive activity of the workshop which underlay writing as both subject and context. The pronoun rate measured something underlying the activity of writing itself—the differential silencing of voice across workshop members and the developmental structure of the possessive voice.

To discover whether writing more (measured by # of words, signifying writing as activity itself) promoted or had an effect on self-ownership term production rates, I measured the effect of total writing (# words) on ownership rates. Where texts across individuals were highly variable in actual writing length, the rate of ownership pronouns to the total number of words in a text was not associated with this variation. Ownership rates for my and our, as well as for other-own pronouns, were not affected by text length. Longer texts were not associated with higher possessive pronoun rates, though they were clearly associated with higher actual quantities of possessive pronouns and thereby more substantial collections of owned objects (See Figure 7 for rate vs. quantity of our). The independence of possessive pronoun rates from the actual quantity of possessive pronouns (and thereby owned objects) from the total number of words written was particularly important in distinguishing the psychological measure of possessive expression from its ethnographic value.

Variables and procedures. I examined the our rate data developmentally across sessions comparing first to later writings. Statistical tests were conducted by considering all first writings (N=34) against all later writings (N=34).

I also measured the our rate data statistically in terms of subject variables of job category (see p. 65) and company tenure (by year of company entry) in order to investigate their relative contributions to the variation of collective possessive expression found in participant writing, as well as their relationships to each other.

I explored qualitative aspects of the data as well. Characterizing subjective pronoun strategies (including I and we as well as my and our), I measured their frequencies among all texts and explored changes of pronoun strategy across serial authors' texts. I matched and compared first and last writings of serial writers (N= 25) in order to describe developmental shifts in writers' pronoun strategies over time.

Further exploring the relationships between my and our as functioning pronouns in the texts, I studied their association with kinds of objects as well as examining owned objects themselves in terms of their frequency of mention and ownership across texts.

The claiming of any object by possessive expression was taken to signify subjective density, as was its repetition by a writer in or across texts. Centers of social gravity were those owned terms shared across writers both within and between groups—shared owned terms. Seeking repetition of owned objects across the writing both within and across voices, I mapped degrees of intersubjective density across groups, writers, and texts. Delineating levels of sharedness from intergroup shared abstract wholes (like "our company") to the uniquely owned (like "our rework"), I characterized the cultural space according to these levels and terms.

RESULTS

Writing participation. Thirty-four (70%) of 49 total workshop participants wrote one time or more during the workshop process. Nine wrote once, 17 wrote twice, and 9 wrote 3 or 4 times within the workshop process.

Writing participation varied across groups, reflecting patterns of experience and different rhythms of engagement (See Tables 4 and 5). Group D (the pilot), wrote early upon my request and later upon the request of the Manufacturing Vice President. Group A wrote consistently across all sessions. Group B wrote late, tending toward the second and later sessions for first writings. Group C wrote early, concentrating most of all on the first and second session of the game.

Genres and styles of writing varied as well. Most texts were written as a single page consisting of a few paragraphs, while a few consisted of several larger wholes, like chapters or topics, structured in relationship to each other and each developed through many paragraphs. Some wrote in the form of a memo, others a letter, still others a report; also some of the Group D participants' first writings provided predicative answers to questions I'd asked in my elicitation.

Text lengths varied across individual writers. Most writers made of their texts a single page, bounded as an object in itself and using under 500 words. Two workshop participants wrote extensively, continuing to elaborate across many pages or as it was for both of them across many screens. For them, writing seemed to operate as a tool of experience; they seemed comfortable putting writing to use already.

Text length: Rate vs. quantity of possessive expression. Writing more was undoubtedly associated with a greater quantity of possessive pronouns and thereby larger

collection of content objects proffering ethnographic value unmeasured by the pronoun rate itself. Those who wrote most extensively produced much larger sets of self-ownership terms than others with higher self-ownership rates, and their texts enabled rich ethnographic views into the activity space of objects depicted through their possessive expression precisely because of the proliferation afforded by their higher production of words in general.

While participants who wrote the most produced texts with high ethnographic value, their rate of possessive expressions to total words was not high compared to writers from the newly elevated Planning group or those who were new and incoming Vice Presidents. Individuals with the highest volume of words overall and the highest number of possessive expressions were from the work category of Technicians, previously Manufacturing Engineering. Despite their length and high quantities of possessive pronouns, they did not have particularly high rates of possessive expression to total words.

The difference between the rate value and the quantity value played out differently across work group categories. Writing participation was also distributed across job groups such that Manufacturing Engineering and Application Engineering members wrote in greatest number, the former also in greatest length (See Table 6 for frequency of writing across job categories).

High ethnographic value texts were authored by those who wrote more rather than those who had high self-ownership-word rates. That is, the ethnographic value of possessive expression was indicated by a high number of ownership instances or objects rather than by the rate of ownership terms within the text. Importantly, those with the

highest ethnographic value in this sense were also those with among the lowest our rates in first writings. The proliferation of possessive expression was the yield of the workshop as a developmental space and the writing as a domain of its capture.

Pronoun profiles

Textual subjectivity. Each text was an operating whole, as well as many of them being parts in an authorial sequence of writing. Self-reference strategies thereby characterized each text, including the orchestra of subjective and possessive pronouns employed among we, I, our, and my. Self-pronoun strategy profiles were useful in sketching some general and qualitative characteristics of workshop texts in terms of the relations between my and our and in terms of their development across the vocal span of serial writers as well.

Not all possible pronoun combinations or strategies were equally represented across the texts. Certain subjective pronoun profile strategies were found to be more likely, and others never appeared (See Table 7 for profile frequencies). Three pronominal strategies emerged as robust combinations of pronoun kinds among the writing. These included the use of only we and our (2/4) in 10 texts; the use of we, our, and also I (3/4) in 16 texts; and the use of all four pronoun kinds, we, our, I and my (4/4) in 20 texts. Among personal pronoun profiles, these three pronoun combinations were particularly stable. Writers who arrived at these profiles tended not to change overall profiles in later texts, and most writers arrived at one of these by their final writing. These strategies, once taken, were rarely relinquished over time.

The next most frequent profile, characteristic of 7 texts, was a total lack of all four subjective pronouns sought, and these were typically early texts. Other strategies were

never employed, and still others rarely so. Specifically, no text was characterized by possessive expression alone without the presence of a subjective pronoun (we or I). My and our together were found in 24 of 66 total texts (20 we, our, I and my; 3 I, our, and my; 1 we, our, and my), always with a subjective pronoun attending them (we, I, or in most cases both).

My was found without our in only a total of 4 instances: 3 instances of I and my and 1 instance of I, my and we. In contrast, our was found without my in 28 texts including 16 instances of we, our, and I 10 instances of we and our, and 2 instances of I and our. Finally, half of those who wrote once (5/9) used 3 or more subjective pronoun kinds in their only text; starting with a higher proportion of integrated voices than those who continued to write in further sessions. Two others used none. Two used 2 each, one on each side of the individual / collective divide, including possessive expression.

Strategic developmental shifts. Among the 25 writers who wrote more than once, first and last writings differed overall by their employment of pronoun strategies. While 2-kind strategies and 4-kind strategies characterized first writings, last writings were characterized by mostly 3- and 4-kind strategies. There was a general shift to the use of more pronoun-kinds of the four in later writings compared to earlier ones. This shift between first and last writings was qualitative, as the increase from 2 to 3 or more pronoun kinds in use guaranteed possessivity in a text, nearly always including the use of our (See Tables 8, 9, and 10 for summary).

The overall shift from 2 to 3 pronouns of those 4 counted here involved the qualitative extension of voice across the semantic divides of both individual/collective (I and my / we and our) and subjective/possessive (I and we / my and our) dimensions. In

moving from 2 pronouns to 3, writing crossed these semantic divides, and in doing so, arrived at relational and integrated representations of the self among others in text—a linguistic differentiation of individual vs. collective—as well as a presence of possession.

Within this overall change, 10 of the 25 writers expanded and diversified the number of pronoun kinds they used among these four. Eight exhibited no change in the number of these four pronoun kinds employed, among which 4 switched in which pronouns they used. And 3 individuals actually decreased the number of pronoun-kinds employed, dropping previously produced pronouns from their writing voice across texts.

In first writings, subjects' self pronoun use was evenly distributed across five pronoun profiles or subjective strategies identified for analysis—using any number and combination of the four pronouns in question. Of those using 2 out of 4 pronouns in first writings, individuals were as varied as they could be in which two, composing almost every combination (but not my and our without I and we). Similarly, of those using 1 of the 4, there was variation across individuals, such that some used I and others we, though none started with ownership markers as their sole subjective pronoun kind.

First-writings were highly variable and heterogenous in terms of which and in what combination, as well as how many of the four pronouns were used. Last writings, on the other hand, were concentrated in the use of three or all four, in concert—possession guaranteed among these. The directionality of textual development entailed increasing use of subject positionalities and the nearly universal production of possessive expression in some measure across individuals.

Each started in a unique place and took a unique path toward a qualitatively homogenous pronoun profile—an increasingly integrated voice across the divides of

possessivity vs. subjectivity and of collectivity vs. individuality. The increasing homogeneity of writing voice across individuals across the course of the workshop entailed the developmental shift toward an integrated possessive voice, including the diversified uses of my and our.

Possessive pronouns

The developmental effect of the workshop on pronoun rates. Though possessive language of all kinds is a small fraction of the whole speech and writing act, our constituted the dominant possessive pronoun found across this body of texts. Our was the most robust ownership pronoun in the writings both in the high number of individuals who used it (30 of 34 writers) and in the high rate of its use (0-4%) compared to other-ownership terms including my and all other-owner markers (their, his, its, or a named other). (See Table 11).

Among possessive pronouns, average our rates increased between first and later writings by nearly significant measure. Mean rates for collective pronouns, both our and we, rose significantly over the course of writing and workshop activity both for serial writers. My and I shared no such clear shifts, suggesting that collectivity was at the heart of the development of possessive expression in workshop writing.

A paired samples t-test comparing the mean rates of our in first and later writings approached significance, with a 2-tailed significance level of .007. Further, significant correlations were found between we and our in first writings [Pearson Correlation = 0.36, Sig (2 tailed) = 0.03 < 0.05], as between I and my in first writings [Pearson Correlation = 0.38, Sig (2 tailed) = 0.03 < 0.05]; our in first writings and we in later writings [Pearson Correlation= 0.36, Sig (2 tailed) = 0.03 < 0.05]; and we and our in

later writings [Pearson Correlation= 0.39, Sig (2 tailed) = 0.02 < 0.05]. An independent samples t-test was also computed, since the data of first writing and of last writings were not literally matched pairs. Assuming independent samples, the data from first and last writings yielded significance at the .05 level for the mean our rate differences between sessions and significance at the .01 level for the correlation between we and our as well as for the correlation between I and my. (See Summary Table 12).

The greatest shift across workshop sessions was in collective pronoun use, accounted for by the rise of both we and our across time. In these texts, we led our as they tended to move together in their development and to steadily grow. Possessivity emerged from collectivity. Collectivity—likely driven by the workshop group activity—seemed to provide the developmental force of individual possessive pronoun change, as our rose with the movement of we and was even contradicted, in terms of possessivity, by the movement of my. When our rose, my sometimes fell. When our rose, we did as well.

Our, while present in the writing of 30/34 writers, was significantly higher in later writings than in first, suggesting that the activity of the workshop had an important effect in cultivating its use. The rise of our coincided with the rise of we rather than my in these data. In fact, my appeared to dip slightly in second writings and to grow again in third writings among those who continued to write across sessions.

Analyses of our rates by variables of company tenure and job group. Historical dynamics in the workplace were reflected in our rate mean differences in workshop writing across employees both in terms of job/work group and company tenure. While both the variables of job group and company tenure were shown to significantly contribute to our rate differences, these measures were further highly correlated and in

fact confounded with each other [Pearson correlation = 0.49, sig (2-tailed)= 0.003, N=34]. (See Table 13).

Collective possessivity of voice as marked by our, despite what might be expected from an intuitive equivalence between psychological ownership and tenure on the job, was lower for those who had been there longer. Further, this was confounded by the difference in our rates found across work categories as well. Those who had experienced significant job rearrangement in the recent years—Manufacturing Supervisors (MS), Technicians (formerly Manufacturing Engineering, ME), and Internal Sales (Application Engineers, AE)—had lower our rates than the front end categories of Design Engineering (DE), Planning (PL), and Vice Presidents (VP).

The largest effect on our rates was accounted for by the company tenure differences of workshop participants [Pearson correlation = -0.48, sig (2-tailed)= 0.004<0.01]. Though several long-term employees did have relatively high our rates in their writing, the relationship between the our rate and years in the company was a significantly negative one. Compared to this dramatic trend in our rates, my rates and rates of other-own terms showed no significant variation by company tenure. Our rates declined with increasing years in the company, an effect that was exaggerated when examining only first writings across subjects.

Further, the effect of job history / work category was also found to be significant [P=0.47, sig (2-tailed)= 0.005<0.01]. This correlation reflected the trend for members of back-end job categories associated with the shop floor to have lower rates of our than those toward the administrative front. Across the range of activity-based job categories were significant differences in the mean rates of our. Those job categories experiencing

the most organizational erasure and change over the past decade were also those with the lowest average our rates.

The highest average ownership rate scores were found among Vice Presidents (M=2.28, SD=1.7, N=3), who were also the newest members of the workplace. Planners also had relatively high our rates (M=1.63, SD=1.3, N=4), as did Design Engineers (M=1.5, SD=0.73, N=6), especially compared to Manufacturing Supervisors who had the lowest (M=0.75, SD=0.87, N=5). Technicians, formerly Manufacturing Engineering (M=0.83, SD=0.52, N=7), and Application Engineers (M=0.87, SD=0.53, N=9), recently reorganized with Marketing, had low our rates as well.

Despite their having produced the highest actual quantity of owned words, Manufacturing Engineering had low mean our rates compared to other job categories. Their profile was unique in this way (See Figure 7 for rate vs. quantity comparison and Figure 8 for distribution of owned objects across job groups). That is, while low mean our rates were consistent with low mean our quantities among Manufacturing Supervisors and Application Engineers, the low mean our rate of Manufacturing Engineers seemed to contradict their high mean quantity of our. The two most prolific writers were among them. They had been differentially reassigned by 1998 to the departments of Application Engineering (previously known as Internal Sales) and Quality (a branch of Engineering in the 1st post-1993 President's term, reallocated to Manufacturing by the 2nd President in August of 1998 and to a new Manufacturing Engineering department in February, 1999).

Workshop undoing of *our* rate inequalities. I wanted to know whether the job category and company tenure effects found across subjects were undone across the course of workshop activity. I found that job category and job stability effects were equalized

over the course of the workshop sessions, with our rates in later writing being more equal across participants from different job groups, because of the possessive increase associated with texts of those in the intramanagerial long-tenured back. The job category effect was largely undone over the course of serial writings. Manufacturing Supervisors and Technicians gained most in terms of mean our rates across writings. Having started the lowest, they also rose the most. I found that the workshop context became an activity space for the undoing of company effects of both history (company tenure) and organization (job category), that voices became empowered—subjectively realized and ethnographically productive—across the course of workshop sessions. The workshop was an empowering experience and this could be seen through the developmental index of psychological ownership in possessive expression.

The tenure and job category effects found among the writing data pointed to the two axes of primary intramanagerial tension in the company: the old/new and the back/front divides. Intramanagerial divisions appeared to have their effect in entry point access to our itself, which showed inequalities among workplace members that were correlated to career patterns and departmental associations in the company. Technicians dispersed throughout the company but formerly comprising the department of Manufacturing Engineering showed significant experiential impacts of the workshop upon their expressive voice.

The inequalities of our in first writings suggested a silencing of voices by workplace experience and constituted a powerful candidate for the measure of alienation and cultivation at work. The equalization of possessive expression among writers across the course of the workshop activity suggested development as an undoing of inequalities.

The elicitation of possessive expression—of our as well as the objects it holds— took the cultivation of writing, but the transformation of the possessive subject derived from the constructive and collaborative work of the game itself. The workshop, as measured in the progress of possessive expression, seemed to undo the effects of job tenure and company history.

Objects of possessive expression

Possessive object kinds. Owned words, differentially distributed across my and our, fell into four general families of words or primary categories—identificatory wholes, evaluative terms, technical terms, and psychological terms—and reached across contexts of reference between real and toy (See Tables 14 and 15).

a. Identificatory words were employed to describe a group whole, including foremost "our company," which was mentioned at least once across all groups (though in group B's use it referred to the real company alone). Other terms included "our business," "our enterprise," "our shop," "our factory," and so on. These terms were used to refer both to real and toy, and sometimes their application seemed even to hover ambiguously between them. "Our group" and "our team" were used to mark the toy workshop experience groups as wholes in the cases of groups A, B, and C, as well as subgroups within these as part-wholes in group D, but they did not function to mark the real company. Some owned identificatory terms comprised the most shared across texts, especially "our company."

b. Evaluative: A second family of owned objects included evaluative terms such as "problems," "mistakes," and "performance." Many of these were found to be shared owned objects as well, though less widely so than identificatory terms. In some sense,

they could be seen as more technical in their orientation than the identificatory terms, but they were more general than the technical specifics that constituted another type.

c. Technical/Material: A third family of owned objects was technical elements, parts within larger wholes, details including departments, jobs, tools, and forms. These included terms like "our assembly area" and "our salesman" as well as "our rework" and "our bills of material" which, fit together, comprised an owned organizational structure across the texts. These technical terms comprised most of the uniquely owned (50-75% of the uniquely owned terms in each group) and had slightly different characters or emphasis of content across groups. In fact, none among them was a shared owned object. Rather, technical terms were referenced across texts but appeared only once as owned.

d. Finally, a group of psychological objects, such as "self" and "opinion," was also identified as objects of possessive expression. These were largely found in the frame of my, but were occasionally extended as in "ourselves," in which a plural set of individuals was uniquely described. This was in contrast to most identificatory objects which described singular, if collectively framed, entities.

The distribution of owned words: Textual tendencies of *our* and *my*. The self/world relation is one that all speakers make in language, continually and mutably, from a changing positionality of voice. It is one that each person negotiates and authors, unidentically and inadvertantly, in part through the incidental language of personal possession. The constitution of self and the formation of belonging are negotiated and rendered through the use of personal voice among other acts and including the assertion of personal belongings. As possessive pronouns express a sense of belonging as well as itemizing belongings themselves, the differential appearances of my and our describe

distinct qualities in terms of the boundary(s) of the self in textual and possibly psychological use.

My and our lend different sense to the objects they claim, just as their sheer presence in a text casts a certain light overall. My and our function differently in terms of their intensive vs. extensive character. They differ in their connotative horizons, despite the aspect of possession they share. As expressive frames for objects, our projects connection with others through the proprietary frame of the pronoun itself as well as potentiating the collective or cultural character of its object. My, on the other hand, pushes the collective potential of expression through the object it marks (as in "my company" at work or "my family" at home), if at all.

Exaggerating the general difference in sense between my and our, I found a teleological divergence between the kinds of objects typically marked by these possessive pronouns in workshop writing. While my was usually used to mark personal objects of the body-mind-person, our was used primarily to mark the cultural contents of a material and social world. Our illuminated the room itself—a culture of activity, of work. Portraying a company in motion, our seemed to precipitate its cultural treasures.

These differential functions of my and our were tendencies of use, in which world-objects and self-objects, or cultural objects and psychological objects diverged across the boundary of our and my respectively. Rather than my and our having additive relations to each other when mixed in a written text, each seemed to develop uniquely differentiated functions in terms of the kinds of objects it marked. The coordination of my and our in speech constituted a certain integration of voice, as it enabled differentiation of possessive content and refinement of possessive pronoun use. It was

typically only in light of and after the socially possessive voice of our that a qualitatively distinct my, distinguished by its individuated and personal content, tended to emerge.

Contents of my developed in their refinement over texts across time toward a working model of the person while the contents of our developed in their refinement over texts and in their differentiation from my toward a working model of the culture and space of work. Owned objects marked by my in these data tended to be psychological objects including mental objects such as self and opinion, as well as social positional objects of individuals such as role and job and even time. Our framed and held the prosthetic cultural attachments, the tools of the working self, in a collective and developmental voice produced across individuals about activity. Possessive voice developed across expression, and its logical and epistemological tendencies were realized in differential verbal refinements of object assignment to my and our across the course of expressive development.

Our and my articulated different relational horizons. My delineated the self, while our materialized place as a space of activity (as in "our rework") and as a space of identity (as in "our company"). In this sense, my and our—not by definition, but functionally speaking—differentially described personal boundary and social-cultural horizon. These tendencies of pronoun use and application were realized across the course of expression as a matter of textual tendency and expressive development.

My tended toward the identificatory and abstract namings of the self as a point of view ("my opinion" and "my role"), while our tended to frame the world out there, naming identificatory wholes as well as concrete and technical details, the abstract and instrumental terms of the cultural space. My tended toward a self-structuring of the

individual (as in a model of the writer/worker/participant) which mediated and triangulated the contents of our, like a lens. In fully differentiated voices cultural objects framed in our seemed to be seen by the contents of my___ (mind, self, opinion) as the psychological or viewing self. Increasingly differentiated in their use across the course of personal expression and in the possessively elaborated and integrated text, self and world as the contents of my and our faced each other in textual dialogue as epistemological partners, so to speak. Beyond this lens of my, our effected a modeling of material and conceptual objects of work.

In contrast to later texts, first texts illustrated the potential interfunctionality of these terms in the speaking subject. Exclusive use of either my or our in writing typically entailed its indiscriminate application across content categories. In possessive strategies that could be characterized as isolated (I/my) and institutionalized (we/our), possessive pronouns my and our marked each other's objects, demonstrating their interfunctional or substitutive potential. In such texts, object kinds typically marked by our appeared among the objects named by my and vice versa.

Despite the tendency of object kinds to be differentially framed by my and our respectively, the concrete cultural space of technical objects typically framed in our could be and was held in the hand of my in some cases. This occurred in several first writings as well as in some later writings whose precursors were comprised of non-possessive and often non-personalized language. Several individuals who used my to name technical cultural objects in first writings reassigned this category of objects to our in later texts.

A second kind of situation explained the unique presence of my with technical object partners and was more characteristic of later texts. This occurred when the

concrete object framed was an authorial contributions or technical inventions to the cultural space of the game (as in a later writing, "my new MRP system").

Across the course of writing, the intratextual differentiation of my and our evolved in relation to the objects they were used to mark. Not only was there possessive growth overall, but the application of pronoun terms to content objects became increasingly organized as well. The textual expression of collective possession seemed to be an inevitable movement of the voice, a textual telos across the course of activity and across the texts of writing.

Presence of one possessive pronoun kind was a necessary precursor to subjective actualization or dialectical integration in the voice, in which each possessive pronoun became specialized and differentiated in its use and our reached its ethnographic potential. The emergence of possessive expression through my typically led to widening use of both my and our and the emergent differentiation of function enabled by their co-production. The emergence of possessive expression in our sometimes gave way to a differentiation of my in later text, but often remained stable over an individuals' texts as well.

The differential application of my and our constituted the phenomenological structure of the dialogue itself. Through possessive expression, the self/world and subject/object separations so widely reinforced in language were bypassed, evaded, and subverted in the intimate expression of ownership. Simultaneously, through the objects' expressive alignment, these separations were also developmentally recapitulated and remade. Increasingly refined across an individual's text, the divergence of possessive expression characterized different categories of content objects.

Our in these texts constituted the birth of cultural possession. Possessivity emerged primarily in the collective and cultural voice of our across writings rather than in my. That is, expressive possessivity and ethnographic productivity were highly associated with the shared rather than lone owning voice, and seemed to be born of it. Coincident to the possessive I found the collective, as the two emerged simultaneously in writers' expressive production of our. As the most robust and fruitful possessive pronoun among the writing data, our was not only the primary possessive voice but the most developmentally mobile. In the singular element of our, collectivity and possessivity of voice appeared as one, revealing the social nature of activity both as a force of development and as a source of possessive expression.

Sharedness of owned objects. Of the 198 owned word instances framed by our across all workshop writings by all authors, 71 instances referencing 18 objects were comprised of words repeated across (and sometimes within) authors as owned and the remaining 125 words framed in our were uniquely owned by a single writer. Common ownership object choices within workshop experience groups were less frequent than between groups, and even those between groups were very few. The highest frequency of shared owned objects in writing occurred across groups rather than within them (See Tables 16 and 17 for shared and unique owned objects).

Objects of ownership in these texts, while marked by our, were largely unshared across owners in their owned use. Those words that were uniquely owned as our in individual writers' texts revealed the richness of detail and concrete particulars of the cultural space of work, in the workshop. Possessive contents varied, like pieces of a puzzle, framed in a collective voice. This was their voice, like one of a distributed

knowledge base, whose collective essence was revealed in the way they held objects rather than in the highly individuated contents of possessive expression. While our described the collectivity of the group, its unique contents described the intricate distribution of cognition itself, an intracultural interfunctional subjectivity (see Hutchins, 1996). Owned words in common tended to be identificatory and evaluative terms, while those owned uniquely tended to be technical, though these tendencies were not exclusive.

Words owned in common: Identificatory language. Almost all of the intergroup shared objects of collective ownership were ways of identifying the groups themselves that served to underline the boundaries claimed by each group around themselves as each a unique game present: "company," "group," "business," and "factory" (See Table 18). Most of the words that groups shared in common described an identificatory substrate. Owned identificatory terms reflected a layer beneath the active present of the game as a material opportunity structure, an underlying our. The intergroup sharedness of identificatory terms reflected not only the social activity context of the workshop but a more general sense of participation in a larger whole of work including both the sense of the real company gained from their employment there and the sense of company in general.

Shared owned words gave a feel for the workshop structure as activity (See Table 16). "Our company" and "our customer," as the self and other of the workshop game, were two of the most shared owned terms across the writings. Populating the space between were the uniquely owned details of the workplace itself—tools, inventions, and products, processes, areas and objects, each uniquely and collectively owned—"our ability to purchase," "our manufacturing efforts," "our order entry," "our bottleneck,"

"our quality standards." Cultural tools were indexed in the collection marked by our, which articulated a collective interfunctional activity-based space.

Where most shared owned terms described the entity of the game, the most commonly owned phrase across groups depicted its dialogic other, in this case "our customer." Only the possessive phrase, "our customer(s)" was repeated across all four workshop-group text-sets. "Customer" was produced as the only word owned as our by exactly one writer in every group, indexing the goal of the game activity as well as the goal of work in the real workplace. This customer's dialogic relation to the our of its pronoun frame uniquely illustrates the union of self and other metaphorized by possessive expression more generally.

The basic categories of other and self as "our customer" and "our company" indexed the structurally dialogic interdependence underlying all social activity from writing to work. Prominent among owned objects across groups, these terms echoed the underlying and operative conceptual grammar of manufacturing work in both its real and simulated forms. The other and self of the workplace—customer and company—functioned as dialogic partners in the structure of work activity—both in the workplace and in the workshop—and in the structure of writing about the game.

This epistemological relation of self and other at the organizational, institutional, or identificatory level comprised the most common possessive ground across texts. It was composed of the complementary appearance of "our customer" across all groups alongside a range of identificatory terms—"our group," "our company," and "ourselves"—each across three of the four groups, as well as "our factory," "our shop," "our business," and "our enterprise," and others.

A glossary of shared owned objects (cultural tools). "Our customer" was repeated at the highest rate across all four groups, as well as being repeated across individuals within groups D and A (across workshop events) and intratextually by a Group D participant.

"Company," referring to the game, was repeated at the intergroup level in 3 of the 4 groups, at the intragroup level across individuals in Group D, and at the individual level both intertextually and intratextually in Group A.

"Company," referring to the real workplace, was repeated as owned at the intergroup level by 2 of the 4 groups and was not repeated at the intragroup or individual level.

"Group" was shared by all groups, but seemed to mean subgroup when used in Group D (and was owned as my rather than our) compared to workshop group as a whole (and even group in relation to other groups) in Groups A, B, and C. In A, it was repeated across individuals, as well as intertextually across a single author.

"Problems" was repeated across three groups (D, A and B), and within two of these (A and B) , it was repeated across individuals as well but not within them.

"Selves" was repeated as our across events as well as across 3 of the 4 groups and was repeated transtextually by an individual writer in Group B. Notably, "self" was repeated as my at the highest rate across 3 of the 4 groups as well.

"Business" (Identificatory) and "orders" (Technical) appeared inside of the 2nd event, like company (real), among 2 of the three consecutive workshop groups. Of these only "business" was further repeated at the intragroup level, both across individuals and within an individual, intratextually.

Owned words repeated across or within individuals within a group were mostly those also repeated across groups. Inside groups, only "failure" was repeated at the interindividual level across members of Group D. At the intertextual level, two other terms were repeatedly owned as "our capacity improvements" by a Group D serial writer and "our task" by a Group C serial writer. Finally, at the intratextual level, "our planning" was repeated in Group A.

Uniquely owned objects: Technical language. Words owned in common depicted a cultural footprint, but the cultural fingerprints were made by words uniquely owned as our by a single writer in a single text (see Table 17). These were words special to the language of the work itself, specifications of resources and activities in industrial manufacturing, details of a technical and instrumental language, artifacts of a locality in motion and tools of an operational working space. The owned universe of objects itemized the world of manufacturing, an internal and expert language. It reflected a language inside of manufacturing work inside their manufacturing workplace, a collection of technical knowledge—the ingredients of this particular culture in place.

The technicality of workshop owned objects compelled my reading of their reference as a triangulation, reflecting not only the toy but also the real—a subtext and underlayment in the sign itself describing the material culture of work. In fact, few possessive phrases gave any explicit indication of the bracketed or fictional or training or toy quality of the game as a separate discursive context. One notable exception was "our make-believe enterprise" which emerged like a meta-voice in later writing of the most prolific writer. Other examples were more technical, such as "our 2-digit part numbers" and "our A+ painter," qualified referents unique to the game itself.

For the most part, the terms of the real were used to describe the world of the game quite directly. They invoked the textual presence of the workplace itself. That is, participants imported organizational languages and terminologies from the workplace—job titles and process descriptions, "our salesman," "our housing expert," "our planning," and so on. Though few writers wrote extensively about the real company in their writing, they used its language both in and outside the frames of ownership. They reinstated its terms.

Real and toy: The language of manufacturing. Participants' writing about the workshop, including but not limited to possessive expression, revealed a discursive encounter between the activity domains of workplace and workshop, real and toy, as language was imported to describe the companies in the game. Extremely local instances of such imports could be found not only inside the details of possessive expression, but throughout the texts as a whole: "We did not assign any roles within the organization, but rather let people gravitate toward roles with which they felt comfortable. I assumed the role of *Department 26* (Housings)" (Group C, Session 1, 1st writing of 3, Engineer).

Other more generalized functional referents were named as well. For example, "Assembly" and "Sales" were, and became through the texts, proper names. Such proper names in the text operated to articulate the context of work and to declare a terrain of the strategic and necessary, a kind of hermeneutically basic landscape, while simultaneously effecting a contextual instability or ambiguity of reference across contexts in the writing. Proper names in the writing such as Assembly and Sales appeared as reifications, reflecting "the radically undeconstructed" (Butler, p.7) assumptions of the workplace as a shared and also distributed cognitive space. A history of work provided organizational

titles, departments, and categories of work, articulating maps of the workshop workplace relationship. Participants used the technical real as a language by which to mediate their game activity, and writers to write about it. Elements of the real were imported as terms that presented themselves in language as givens. Assumed and undeconstructed, they provided a cultural starting point from which the game was played, a portrait of the real by which the fiction was framed, a very specific language—the language of manufacturing. The referents of their workplace provided a collective resource for the game activity and appeared as subjectivized cultural objects, as tools in hand, as objects of possessive expression as their work as a language was brought to bear and put to use.

In individuals' possessive voices, the kept was carried over to the workshop domain from biographies and possessive histories of decades-long practice and sustained social and technical participation at work. Assimilatory linguistic moves of property in the workshop context served to import cultural tools through the subjective acts of ownership into changing experiential terrain, they affirmed relationality, reflected activity, and depicted elements of a culture in motion.

In this data I found our as a unique lens for the mapping of a cultural portrait from within. I explored it as a view into the collective subjective cultural horizon, as a tool by which to map the detailed and widely distributed cultural portrait it comprised. Game-based possessive expression mapped their cultural tools and rendered a portrait of the cultural space of gear manufacturing, uniquely inhabited by them then and subjectively distributed across the entire cultural group. The language of their work—their actual workplace and technical ground—was used in their collection of owned objects. It resembled the real, while describing the toy quite directly.

Identity and identification: "Our company." Objects may be transferred across the course of their textual repetition across owners, changing their status among non-owned, other-owned, self-owned (my), and shared (our) frames. Because of this, words can be tracked across texts and investigated for their meaning across instances and authors, with their arrival in ownership lighting the way.

"Our company" was the only owned word to be assigned across the contexts of real and toy (See Table 19). Further, in its reference to the workshop group companies, it was among the most shared of owned objects across groups. In workshop writing, the phrase "our company" was produced 9 times to mark the workshop game group compared to 3 uses of the same phrase to mark the real company. While writers in Group D and Group C used "our company" only for the workshop game group and Group A used it to index both, Group B reserved this phrase only for the real place of work.

The only appearance of "our company" exclusively referring to the real within an author's voice arose in a 2nd week text by a Group B serial writer. It emerged as a possessive distinction of the word "company" framed more generically in earlier instances as "a company" or "any company." "First of all, no one would begin to run any company with only about an hour of preparation..." (Group B, Session 1, 1st entry of 4, ME). This serial author started in week 1 writing with "any company," and moved to a collectively owned use of the word company to refer to the real in the 2nd week.

> The second session showed how a company could get into trouble... However, I still believe that an exercise like this one only has limited value as to how our company ***[note: real]*** is run. You can't put a bunch of people in jobs that they are not trained to do and expect them to perform with optimum efficiency, especially when you are manufacturing pretend gearboxes that are held together with tape, glue, and spit. ... A Company that wants to be world class should... (Group B, Session 2, 2nd entry of 4, ME).

Distinguishing the workshop game from the real "our company," "our factory" emerged in the 4th session writing to mark the workshop game group.

> … Maybe our factory [*note: potential ambiguity of real and game*] should only make parts… Making bad decisions up front certainly caused us missed opportunities to make more money in our factory [***note: game***]….
> I still haven't figured out how this game is supposed to help me do my job. Maybe when I do I can help to make **XGC** into the World Class Company it should be" (Group B, Session 4, 4th entry of 4, ME).

As the game became owned and abbreviated in possession, the real reemerged transmuted in the frame of my ("my job") and more formally in its abbreviated proper name.

Connotatively, the phrase "our company" seemed to echo both toy and real, even when its meaning could be contextually resolved in any given textual instance. The appearance of "our company" in each text was unique and its meaning unfixed, universal, even insecure within a writer's voice. In one instance the contextual ambiguity of the term between real and toy, workplace and workshop, was textually generated and sustained through the course of writing. This text illustrated the ambiguity with which the phrase "our company" could be produced, and was the only one to contain the same owned term across contexts of reference—real and toy. Illustrating the seamlessness between real and toy by the third week of the game, an costing expert once assigned to ME, wrote,

> MANAGERS WERE ASSIGNED TO THE VARIOUS DEPARTMENTS BY THEIR OWN PERSONAL CHOICE BECAUSE SEVERAL MEMBERS OF *OUR TEAM* (FIVE) WERE NOT PRESENT AT THE START OF THE CLASS, HOWEVER (TWO) DID COME IN A FEW HOURS LATE. THIS WOULD HURT ANY **COMPANY** WHEN YOUR **COMPANY** HAS 30% OF *THEIR WORK FORCE* ABSENT…. WE NEED TO MAKE A LIST BY SERIAL NUMBERS TO KEEP TRACK OF *OUR REWORK*…WE KNEW THAT PARTS WEREN'T RIGHT BUT WE DIDN'T WANT HIM TO REJECT THESE MARGINAL THE PARTS, BECAUSE THIS GAVE US A BAD NAME AND WAS HURTING THE PROFITABILITY OF OUR **COMPANY**.

> WE HAVE THE SAME CONDITION IN THE SHOP WHERE MARGINAL PARTS MOVE FROM DEPARTMENT TO DEPARTMENT WITHOUT ANY VARIATIONS BEING WRITTEN UNTIL THEY GET TO THE ASSEMBLY DEPARTMENT. IN THE ASSEMBLY AREA THEY WRITE SOME VARIATIONS ON THESE PARTS OR THEY FIXED THEM WITHOUT WRITING A VARIATION. IN TALKING TO THE WORKERS IN THE ASSEMBLY DEPARTMENT THEY STATED THAT *OUR WORKMANSHIP* HAS BEEN GETTING WORST IN THE LAST FEW YEARS. THEY ALSO BLAMED PEOPLE IN QUALITY CONTROL FOR MARGINAL AND BAD WORKMANSHIP LIKE THE MANAGERS IN OUR **COMPANY** (2-toy) BLAMED Z. THIS POINTS OUT TO ME THAT WE MUST REVIEW WHAT QUALITY MEANS TO OUR **COMPANY** AND HOW IMPORTANT QUALITY IS FOR THE FUTURE OF OUR **COMPANY**. WE MUST RETRAIN *OUR MANAGERS, FOREMAN AND WORKERS* ON THE IMPORTANCE OF GOOD QUALITY ON ALL *OUR PARTS* (resolution in real). WE MUST CHANGE THE PERCEPTION THAT QUALITY PEOPLE ARE THE BAD BOYS AND GIRLS OF THE **COMPANY**. (WE MUST MAKE THEM SAINTS) (Group A, Session 3, 3rd writing of 4, ME).

Two instances of "our company" referring to the real company occurred in his third text, amidst the use of the same term applied to the game. In this piece of writing, the word company was transferred across owners (from any to your to our to the) and across contexts (from any to the game to the ambiguously and ideologically produced reference to the real).

Alongside the development of the possessive phrase "our company," technical cultural details populated other possessive phrases and served to contextually anchor its meaning in real vs. toy. "Our rework" was used to refer to the game, and also "our managers, foremen and workers," "our workmanship," and "our parts" were used to refer to the real, as "our company" switched back and forth between the semiotic gravities of real and toy, straddling semiospheres across the text.

The textual straddle of contexts in the third week was an achievement of possessive expression and a development its author. That is, the use of the word "company" was fully unowned in the first text of this same author, which was empty of possessive expression except for markings of other owners, as in "each others' action."

> GEAR COMPANY WAS ESTABLISHED… AT THE START OF THE COMPANY… WE DID NOT KNOW IF EACH OTHERS ACTION WERE GOOD FOR THE COMPANY… BECAUSE WE WERE NEW AT STARTING A COMPANY… WAS NOT WORRIED ABOUT THE OVERALL GOOD OF THE COMPANY… PLANS FOR THE COMPANY (Group A, Session 1, 1st writing of 4, ME).

In his second writing, "our company" appeared once and for the first time, referring to the workshop game, and echoed by "the company" which followed three times.

> …ONCE WE STARTED TO RUN OUR COMPANY… WE AGREED ON HOW WE WERE GOING TO RUN THE COMPANY AS A GROUP… THAT ALL DEPARTMENTS MUST PLAN AND PLAN AND PLAN IF THE COMPANY IS TO BE SUCCESSFUL… IN ORDER FOR THE COMPANY TO BE PROFITABLE (Group A, Session 2, 2nd writing of 4, Manufacturing Engineering).

Finally, in his last writing, after week 3's integrated ownership of real and toy, two uniquely owned identificatory terms appeared that signaled a height of intercontextual integration as well as possessive identity. These were "our enterprise" and "our gear box company."

> THE HABIT OF LATENESS WASN'T FAIR TO OUR COMPANY… AS A COMPANY IN THE BEGINNING OF OUR ENTERPRISE… IN RUNNING OUR COMPANY…THERE IS ALWAYS RESISTANCE IN THOUGHT AND PRINCIPLE ON HOW THE COMPANY SHOULD BE RUN. THIS RESISTANCE IN THOUGHT AND PRINCIPLES WAS PRESENT IN OUR GEAR BOX COMPANY AND IS PRESENT AT **X_____GEAR CORPORATION**. I HOPE THAT (XYZ) CAN IMPROVE THESE CONDITIONS WITH MORE TRAINING AT **XGC** (Group A, Session 4, 4th writing of 4, Manufacturing Engineering).

In his final text, the real company also appeared for the first time both by its formal name and abbreviation in this writer's voice.

On naming: The real company. Eleven participants (30%) of a total 34 referred to the real company directly by proper name in their writing about the workshop, and 7 used paper on which the company name was already in print (See Table 20).

"X_____ Gear Corporation" titled company graph paper used in six handwritten texts (5 in group C and 1 in group B), as well as company letterhead used for one (Group D). Seven texts across five writers Group C used the company name as a titling device,

employing graph paper and memo headers as well as producing its name in body texts, while owning no workplace objects in their writing. Two Group C 1st-session company graph paper users wrote the fully spelled out formal name of the company, "X_____ GEAR CORPORATION," as the title of a later writing, formatting a company memo page and also used the initials of the company within their workshop texts.

Of those who referred to the workshop directly, most writers used the company's initials, as in, "THE WAY WE DO BUSINESS REMINDS ME ABOUT SOME PLACE I WORK FOR, **XGC**!!!!! SOME OF THE OBVIOUS THINGS THAT WE DO AND **XGC** DOES ARE…" (Group B, Session 2, 1st writing of 1, Design Engineer) and, "I still haven't figured out how this game is supposed to help me do my job. Maybe when I do I can help to make **XGC** into the World Class Company it should be" (Group B, Session 3, 3rd writing of 4, Manufacturing Engineer, renamed Planner). A few used its fully spelled out name as in, "This class was interesting; it was a mirror image of **X---- Gear**" (Group C, Session 1, 1st writing of 1, Planning).

A fourth naming variation appeared in the workshop writing. "I have been a shop person my whole career here at **x--a gear**…. As the group started to go through the exercise, what really stood out was the fact that we had created a mini **x--a gear**" (Group B, Session 1, 1st writing of 3, Manufacturing Supervisor). Two weeks later, he continued, "Poor quality every job late confusion **x--y gear** was back" (Group B, Session 3, 3rd writing of 3, Manufacturing Supervisor). This uncapitalized and abbreviated reference to the company name reflected a nickname that was common in the speech of workplace members. Its unstable spelling across this author's texts echoed the history of the company itself—the tension between factory nickname and virtual address and eventually between workplace and website.

DISCUSSION: TOWARD A THEORY OF BELONGING(S)

The connective function of possessive expression. My quest for the genesis of vocal possession in work activity was both experimentally confounded and interpretively enhanced by the simultaneity of its emergence with the collective voice, in our. That is, our oriented a reconceptualization of the problem itself, highlighting both the institutional and collective qualities of work activity in the workshop and potentially in the workplace. Our returned me to Activity Theory as a source of resolution and explanation. Psychological ownership at the individual level, if linguistic ownership of a voice provided any reflection, was cultivated in the form of the whole, in the collectivity of our, and through the collective activity of the workshop whose ingredients it framed. The collection of objects framed in our, gleaned from experts of a cultural space such as a workplace, depicted a world that is held in a unique sense, subjectively and collectively at once.

In the case of the workshop situation as secondary and reflective cultural space as well as the primary activity context of the writing, the owned reflected an imported language from the cultural past. By bringing the known to bear upon the workshop space, writers recalled the workplace and claimed its use as a resource for learning, coping, playing, and working in the game. Expressions of ownership, constrained by the situation, defined a threshold between real and toy, a boundary between situations, a gate between fields of action. Depicting the tools of the cultural mind in place, the owned articulated a semiospheric overlap, a kind of cultural underpinning across territories of action, across activities, across subjectivities, and across contexts.

What participants did in their writing, as in the game, was to use the language of the real workplace—their knowledge—importing it as a linguistic means by which to approach the problem and appropriate the situation at hand. Participants wrote in a technical language they already knew—the cognitively availed rather than the sentimentally held or materially available. In applying their workplace words to a novel situation, in projecting their use upon the game, participants activated, expressed, transferred, and even advanced their possessive histories. Already internalized, their distributed technical subjectivity comprised a transferable interfunctional language across the contexts of real and toy and literally expanded the cultural space of the workshop from within.

In participants' writing, toy and real operated as two worlds of reference sharing a single universe of language. This common language was an area of intense boundary work across work, school, and play, and among past, present, and possible, a kind of hybrid-use tool or boundary object (see Star, 1989). This prior knowledge or already spoken language of work—arguably an already cognitively owned world of reference—facilitated its own reinvention and innovative re-use in the workshop space. The workplace, as knowledge and language, as assumption and reference, was imported into the workshop activity space itself as a means of appropriation. Participants' writing indexed this cousin activity and its integral relation to the workplace in the short lived span of its saturation by their language, their words of work.

The voice of work. The personal significance and meanings of work for those who do it, though challenged by the condition of capitalized labor, are not purely negated by it. Rather, the phenomena of workplace psychological ownership—from innovation

and practical creativity in solving problems to invention of tools on the job to possessive expression in talk and writing to acts of subtle and outright resistance—testify to this authorial survival of the self at work. Despite a lack of formal, economic, proprietary ownership at work and despite the alienation widely attributed to this condition, people inscribe themselves into what they do in signing products and in designing process itself. Work activity as experience gains history, biography, memory, and identity. Alongside the limitations of their formal authority in the workplace, workers take countless embedded and practical opportunities to design, author, and sign the work itself—in doing it. Punctuating the conduct of tasks and jobs are moments of authorship in the heart of the work itself (de Certeau, 1984).

"We are at home in the world and can find our way about it because it is our world produced by us as the context of our pragmatic activity" (Dreyfus, 1997, p. 272). Invoking proprietary, productive, and authorial relations as well as their continual folding back upon each other across time, Dreyfus describes a dialectical relationship as well as a possessive ground between production ("our pragmatic activity") and context ("our world"). Practiced knowledge as expertise in Dreyfus' view is intimately linked to psychological ownership and material relationality. He explains that humans experience themselves not "as subjects with mental representations over against objects," but rather "as absorbed in our current situation, responding directly to its demands" (1997, p. xxxi). Dreyfus' notion of the nature of experience is one of being tied into a reality in motion, immersed in action—emerging from it and responding to it.

In pointing to "the structure of the field of experience, not the objects in it," Dreyfus forges an important and useful distinction between the subjective view of

resources (horizon) and the objectively available resources, culture vs. environment, structure vs. content (1997, p. 274). This field structure is a way that "objects in it" are cognitively linked, socially distributed, and culturally held with a certain potential for relational mobility and subjective reformation in the continuous, even if changing, ground of activity. Subjective cultural structuring as "the structure of the field of experience" described by Dreyfus has a dialectical relationship to those "objects in it," while it resists being reduced to them or described by them. The experiential field is shaped by material, social, technical, and symbolic resources of the environment that comprise the circumstances of action, but also by subjective histories. In the process of activity, it gains coherence and in the logic of use, and collectivity by the social arrangement of work activity. "The structure of the field of experience" gains expression as well, I argue, in the production of the possessive voice.

As one of the discursive functions that potentiates learning, innovation, and expansion (Engestrom, 1987), possessive expression reflects the formation of participatory expertise. Enabling a depiction of world in self, culture in cognition, place in person, work in mind, and tool in hand, possessive expression provides a psychological reflection of activity. Possessive expression reveals the peculiar and unique intimacy of expert engagement—the self-tool relation—summarizing a person-culture connection and commemorating their union in use. The way it does this is by its grasp, what it holds in words, to what it points. A word framed by possession has a meaning of personal relation. Possessive pronouns pick up and hold, and as they do, "the grasping movement changes to the act of pointing" (Vygotsky, 1978, p. 56). The union of subject and object in possessive expression describes the self-tool relation. This is the category of activity—

of tools in use. The object of ownership reflects a cognitive ground of skill and practice and distills an experiential history of attention and use. Possessive expression uniquely dresses nouns as verbs in the expressive work of subjectivity. Owned objects are held as the tool in hand, as thought in action, as activity, or as what Scribner called work. They are cultural artifacts. I saw possessive expression as a cognitive artifact, a psychological residue, and read its presence as intentionalizing objects. As elements of activity, the emergence, significance, and reflection of such artifacts occupy a unique methodological niche, revealing culture and cognition in the structure of belonging.

A cultural psychology of tools in use. Objects of linguistic ownership have their genetic origin in their experiential salience, gained itself by their cultural history and priority. In this way, they reflect a process of cultural selection. The spread of this selection across individuals sharing a context makes its elicitation a difficult challenge but no less a rich resource for the empirical qualitative mapping of activity-based culture and a ground-up modeling of work as socially distributed cognitive terrain. Possessive speech illuminates the cultural activity of a space and the ingredients of work itself, the building blocks and cognitive landscape of the working activity system. Objects named as owned comprise the very lodging of thought, whose cultural priority is exposed by their collective bracket and whose personal priority is revealed in the event of possessive expression. What is elevated through the possessive voice of individuals as personal reveals the grounds and boundaries of belonging of a cultural activity system in place.

> If made culture consisted of a handful of objects—a god, an altar, a blanket, and a song—it might be possible to articulate the relations between the objects... Once, however, one resides in a deep sea of artifacts, that task becomes much more difficult, and very possibly impossible. What becomes strikingly apparent, however, is the multiplicity of paths by which existing objects sponsor new objects (and in this picture of multiple paths, we gain some glimpse of the

> massive front on which the imagination is constantly at work, patrolling the dikes of made culture, repairing, filling gaps, extending, reinforcing. (Scarry, 1985, p. 321).

What makes owned objects into artifacts is the sign of use which is the relationship of activity to its existence and the revelation of its role as a cultural tool, abbreviating history, condensing information, and expanding potential action. Stetsenko explained this notion best:

> ... it is important to realize that cultural tools can also be conceived of as types of activities (Stetsenko, 1993). Specifically, these tools can and should be viewed not merely as objects (things), but as embodiments of certain cultural practice, crystallized templates of action, schematized representations of certain ways of doing things in human communities (Stetsenko, p. 146, 2001).

Hutchins similarly described, "partial solutions to frequently encountered problems are crystallized and saved in the material and conceptual tools of the trade and in the social organization of the work" (1996, p.374). Held in the hand of the mind, tools emerge transformed on both the psychological and material planes. Possessive expressions are a sign of such use, describing objects that have been transformed by their instrumental history and developmental engagement.

Cole (1996) offers a more general notion of artifacts to articulate the power and potential of using this term across the language/object divide.

> an artifact is an aspect of the material world that has been modified over the history of its incorporations into goal-directed human action. By virtue of the changes wrought in the process of their creation and use, artifacts are simultaneously ideal (conceptual) and material... Defined in this manner, the properties of artifacts apply with equal force whether one is considering language or the more usually noted forms of artifacts such as tables and knives which constitute material culture (1996, p. 117).

To the extent that objects gain representation in the shared subjectivity of a working cultural group—including event memories, people, ideas, tools, and objects—they index

cultural and historical centers of gravity. As anchors of social meaning, they form content-pools and cultural eddies. Their empirical collection approximates the shape of knowledge domains from subjective points of view, accumulating a unique artifactual collection. Such a collection can be characterized as Star's boundary objects, described as

> objects that are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use, and become strongly structured in individual site-use (Star, 1989, p. 46).

Most relevant is Engestrom's question, "When is a tool?" in which he considers "multiple meanings of artifacts in human activity" (1990). In this essay, Engestrom describes two views of the object, the personal view and the system view, and argues "why it is vitally important for the actor to take the system view and for the researcher to take the personal view" (p. 171). Most importantly, he describes tools as "transitional, fluid entities" and articulates the mobility of objects in the system of activity and in terms of subjectivity itself.

The object of possessive expression reflects a dynamic boundary of the self/world relation and expresses the sign, I argue, of a tool in use. The effect of possession is to make artifacts of words by revealing personal histories of use. If symbolic ownership marks objects in a unique way, it concerns the shadow it lends them, the way in which they become verbally distinguished and narratively specified in a complex of meaning by their status as closely or personally held, by their possession. Possessive expression, as it typically interrupts a text, carries the noun it harbors into a new place. Personal possessive pronouns partake of an "illocutionary force" described by Crapanzano as characteristic of first person utterances more generally:

> It is as though their referentiality looped over on itself and became at once its own

> object and yet, through some sort of topological contortion, other than itself. Were we not appalled by the idea of creating yet another linguistic category, we would call such locutions "symptomatizers." In this respect these first person utterances are, on an ideological level, equivalent to nonverbal, "involuntary," "autonomous" expressions of emotion. (Crapanzano, 1992, p. 235)

Alongside their psychological or emotional tone, though, possessive pronouns literally distill reference, as they articulate objects in the contours of belonging.

Objects housed and sheltered in a sentence by the possessive language of the self—among the only personal words we have—deserve a category of their own to describe their simultaneously psychological and ethnographic function. This category is one in which the lent sense to the object from its marker—its possessive affect—transforms the object as a noun into a word of action like a verb. A gerund of sorts, possessive expression portrays the psychological action of a tool in hand. This happens not in a grammatically literal sense for the sentence, but in the character of the object described as it becomes situated, grounded, embedded, embodied, and held in the grasp of verbal possession. Possessive expression accelerates the object, making it like a verb (a word of action) and marking it as a tool. How this happens concerns the psychological action of claiming as a taking into use. The mark of ownership appropriates an object and semiotically extends the self in expressive and narrative form. It renders its object a tool in use.

My argument in this dissertation is that the psychological function of ownership in expression approaches the commemoration of experience and the signature of use. As artifacts, possessive expressions can be read toward both the psychological and social-historical planes. Possessive expression articulates a cognitive space of mediation—material and ideational objects that are in use, the psychological category of tools. The

pen though categorically a tool becomes subjectively a tool when it is put into use, when it comes into the service of attention and activity, when it is made to work, when it is grasped in the hand or the mind of a person. This coming into use provides a metaphor for the moment of possessive expression and its possessive appropriation and precipitation of the word and referent it claims. In a process of relational intensification and semiotic mediation, possessive expression convenes an active zone of temporary and psychological possession. As possessive expression constitutes a language of use, belonging is expressed in the language of belongings.

In the verbal turns of person, tool, and place at work are the seamless extensions of self to work and work to self and the very subject of this dissertation—the activity based notion of psychological ownership and the reflections of the person-context union in its human expression. The intimacies among persons and objects structure this relationship of connective intensity developed through work activity and revealed across various forms of human social and practical expression. There is a psychological relationship that develops as objects change people through their collaborative use of them. They become "ours," even if they belong to others first and even still.

Convening a cultural and psychological here and now, possessive expression makes present a given moment of complete and utter reality, whose capture and description evades almost every theory of culture and model of identity. Such ownership reflects a psychological relation not over objects, but more like with. Introducing a taxonomic alternative to traditional dichotomies between knowing that and knowing how, Shotter proposes a "knowing of the third kind" as a "knowing from," an intra-contextual acting point of view. "It is precisely the attempt to understand what it is to act from

within a 'position' in a culture, that entails focusing upon the nature of the third kind of knowing," he argues (1993, p.xiii). Rather than conforming to the conceptual and procedural, scientific and everyday, or formal and empirical dichotomies that characterize cognitive theory both in and out of the Vygotskian tradition, "knowing with" or "from" is a kind of proprioceptive and relational cognition, bordering on the possessive itself. "...[A]lthough, within the continuous, oscillating flow of activity in the self-other dimension of interaction between us, there is no problem of detecting the activity of 'mind,' the problem is 'whose mind is it?'" (Shotter, 1993, p. 204).

Possessive expression in the fiction of language arises as a moment of subjective grasp—an identificatory claim—and as a moment of objective display—a pointing and showing. Uniquely marking authorial histories and instrumental relations, possessive expression provides a powerful metaphor as well as a subtle trace of the cultural nature of human experience, identity, cognition, and development. Indexing objects and underlining them in subjective terms, possessive expression provides an ethnographic lens as well, a filter by which to see as if from within, a phenomenological starting point for the analysis of psychological culture.

Symbolic possession, as it interrupts the routinely objective tone of writing and attaches as pronouns to nouns by grammatical necessity, reveals the subjective pearls of a culture—a treasure chest of its tools in use. While amplifying the personal sense or subjectivity of referents among a text, possessive expressions describe the cultural substrate of a group, like signposts on a map of cultural ground. Referent modification by the microsemantic distinction of collective possessive expression reveals the

phenomenological structure of a cultural horizon, an intimate and local portrait of social and cognitive categories in use. From the subjective, I argue, can the cultural be read.

Like cultural artifacts of activity, like cultural tools in use, possessive contents describe, condense, reveal, and index a world in motion and a culture in use. Possessive pronouns in speech mark cognitive artifacts that themselves index a range and distribution of cultivational and functional resources characterizing a subjective cultural horizon of activity. As a method, the measure of possessive expression potentiates a reading upon texts to discover the cognitive toolbox of work and the way that its objects are shared and held—the practical and operating culture of a workplace. Across speakers of a given space, possessive expression articulates the cultural and cognitive survivors of a distributed and ongoing process of instrumental selection. Within a situation, possessive expression describes the held in mind and put to use—a social and material distribution of cognition itself, including its diversity of priority, its plethora of content, and its intersubjective substrate. These objects are cultural objects comprising a puzzle of many pieces, held by each as our, but distributed rather than overlapping among individuals, which together make a world.

The zone of possessive expression is a subjective and cognitive space of objects, but not a private one; rather it reflects the public or social domain of cultural practice and depicts it in particular detail. Brought together, the collection of objects constituted through expressive possession in workshop writing across individuals comprised a collective but diverse universe. The contents of collective possession in speech revealed a world of human-object hybrids or cultural tools—a collection of objects of collective possessive expression. Our in writing about the workshop experience illuminated the

cognitive environment of activity—work itself—through the hands of the voice—in the uniquely held objects of possessive language. Uniquely held possessive contents described the social and material distribution of cognition itself, including its diversity of priority and its plethora of content—a cultural treasure chest. Mead offered an interpretive clue to the ethnographic value of this unique collection:

> And what is peculiar to the self is what it calls its own. And yet this value lies in the social situation and would not be apart from that social situation. It is the contribution of the individual to the situation, even though it is only in the social situation that the value is obtained. (Mead, 1934, p. 212)

If as he suggests, "what is peculiar to the self is what it calls its own," possessive expression promises a cultural gold mine. Among experts, such peculiarities are the pearls of cultural development, honed by the history of practice and experience.

The possessive expression of expertise. Methodologically, the analysis of possessive expression as a psychological and semantic hybrid of ownership and membership, bridges questions of social identity to issues of cognition, expertise, experiential knowledge, skill, and life activity history and unites the study of belongings (Csikszentmihalyi & Rochberg-Halton, 1981) with the study of belonging (Glick, 1997). While this works theoretically, its practical consideration is clearly more complex and empirically entangled with the problem of cognition and language itself. The highly specialized language of expert practice, whether in manufacturing work or any other activity is often foreign to those who might study it. In that sense, researchers face a language barrier and a problem that can only be approached in ethnographic terms. To discover the cognition and subjectivity of experts is no clear and simple task, since expert speech is notoriously opaque (see Dreyfus, 1997; Keller & Keller, 1996; Scribner, 1986). Where speech leads thought in learning for the novice and intermediate, it goes largely

underground in the expert cognition of practice, in knowing. As explication loses its primacy in learning across the course of cognitive development, the leading relationship of language to cognition in learning becomes reversed in expertise. Vygotsky described this as private speech, and equated it with thought itself (1987).

In the workplace, the opacity of expert speech has several compounding factors including the suppression of voice associated with the social and organizational conditions of work, which also provide confounds in interpreting verbal data. Alienation may have both expressive and silencing effects over time, perhaps in developmental order from resistance to self-estrangement. This suppression may silence the already privatized voice of expertise. Arguably in the company studied here, experts with decades of experience were alienated by the changing conditions of their work and challenges to their psychological ownership in the mid- to late 1990s, accounted for by the tenure effects found here in our rate differences and inequalities.

The workshop tilled this psychological ground, revitalizing historic identities and stimulating alienated experts in the revolutionary present of the game. The problem of getting at the world described in our is the problem of cultivating the voices of its keepers and particularly their possessive expression. The workshop was a developmental space where workplace history was played out and its psychological effects were remediated and textually undone. The workshop process influenced the expression of our across individuals' texts, and presumably participants' sense psychological ownership as well. Development of the collective possessive voice seemed to depend on the cultivation of its authors and signaled a transformation of connection and a remediation of the sense of belonging associated with the workshop activity.

AFTERMATH

> The psychologist, too, sometimes finds himself in the position of the historian and the geologist (Vygotsky, p. 62, Sobraniye Sochincinia, Vol. 1; quoted in Yaroshevsky, 1989).

Workshop and workplace: Beginning and end. Though the project in which this work participated was intended to have a positive cultural and business impact upon the whole, efforts associated with it were radically discontinued after 10 months of intensive and unconcluded research and intervention work. How the workshop might have affected the workplace in the internal company project of process improvement was obviated by participants' future relationships to the workplace and by the fate of the facility itself. As I charted the elements of possessive expression across workshop writers, these same writers as employees faced quite a different trajectory in the scenario of their actual jobs, their company, and their place of work.

Ideally construed as comparative conditions of experience and domains of human activity, as macro- and micro- contexts for the cultivation of psychological ownership and its expression, the final juxtaposition of workplace and workshop in this dissertation illustrated the contrast between them as cultivational grounds. The trajectories of psychological ownership concerning the game space and the workplace literally contradicted each other in those who experienced both. Development of collective possessivity in the workshop resembled trajectories in the company's past far more readily than in its future.

While analyzing the data from a research-intervention process intended to cultivate historical experts (the experience base and so-called "knowledge capital" of a gear company) in the leadership and constitution of workplace change, I witnessed and

chronicled the negation of this goal by the very same company itself. In studying psychological ownership, I confronted its historical disruption, as the nine months following the workshops, from April to December of 1999, saw the workplace emptied of its people and machines. Piece by piece and person by person and finally all at once, the historic factory was dismantled, dismembered, and radically undone by decision making at organizational levels far removed from and uninformed by the activity of work itself.

In contradiction to the workshop agenda and in profound antithesis to the workshop experience, the workplace in the months following was rapidly destroyed by corporate decisions executed upon it. The workshop had not shaped the decision-making or learning experience of new and eventual power-holders in the workplace who neither participated in them, nor attended to their results, potential, or participants. From April of 1999 through the end of the year across the final months of the century, a whole tradition of work activity was dismantled through the steady elimination of employees and machines. Practice by practice, machine by machine, and job by job, the workplace was eliminated, each erasure foreshadowing the impending loss of the whole.

Though this began as a dissertation about psychological ownership at work, it became a biography of its loss as well, as workplace elimination became a concerted effort and explicit order of executive strategy across the second half of 1999. From April through September of 1999, I visited the factory three times. In continuing to witness the workplace after the completion of the workshops conducted in October 1998 and February 1999, I archived and documented the organizational demise of this company. In doing so, I witnessed an after, which rendered my own ethnographic 1998/99 workshop

now as a progressively distinct and obsolete historical moment, a corner around which the business seemed to turn and pass on by.

I did not foresee the loss of jobs or of the workplace, but I witnessed both and was disillusioned by them. As orders were outsourced, jobs eliminated, and machinery sold, I happened to be near. The course of this company's disappearance was something I was close enough to witness because of the work that I had done there. I happened to be near, on the phone and on the receiving end of electronically forwarded reports about the changing workplace from April 1999 to January of 2000, and beyond. I documented the period after the workshop as well as I could, with the courageous help of those who forwarded memos of it to me and kept me almost daily apprised.

By December 1999, this accumulation of memos detailed the elimination of the place of work including the human resources and technical equipment involved. In effect, I filed the end of the place itself as it was issued in electronic memoranda over the course of the fall of 1999. In so doing, I documented a historical moment across which jobs were reassigned, rewritten, and, by the year 2000, mostly gone. Tracking the elimination of the workplace in 1999, practice by practice, person by person, and machine by machine, I reconstructed the past they reflected, struggling for their survival in my own research.

Revisiting psychological ownership through a consideration of loss. My exploration of psychological ownership was complicated by witnessing the unexpected unfolding of events and loss of jobs in real time. My continued ethnographic pursuit of the workplace after the workshop I conducted there revealed the company's final outcomes in progressive forms of its own negation. These negations were instituted electronically, organizationally, materially, architecturally, textually, and strategically,

and transformed the workplace into a zone of rapidly changing boundaries and shifting ground. Location and dislocation, ownership and loss, duration and cessation collided as temporal narratives that alternately grounded and disoriented the notion of psychological ownership.

Through the powerful lens provided me by the workshop experience itself, the workplace as a technical and historic project had come into my intimate view. While the game offered participants an outside perspective on their work, it lent me a view of its very inside. Through the workshop, I had begun to understand their workplace as a place of history and their workshop companies as a chronicle of the place of work. I heard the story of ownership in industrial work and life through the managers of this factory and found its human development and basis in collective activity. I saw their collection of claims and losses—desks, hard drives, phones, jobs, and ultimately the place itself, as well as ideals, and most important to my research, even words. I explored the history of this dense collaborative intimacy over time among people and machines within it that made this place itself, and whose eliminations illuminated the loss of something other than each one—something irreducible, a whole, an identity, the collectivity of work itself.

The turn of workplace events that followed the workshop process pointed to the contradiction of psychological ownership in the condition and place of the other-owned—in the real place of work. While I analyzed the development of possessivity and collectivity in expression and the expansion of psychological ownership in the context of the fictional activity-based game, I witnessed the events of workplace elimination including the dismantling of the facility and the deletion of jobs long held by its members. Over a course of job elimination and corporate reorganization that followed the

workshop process and violated the purposes of its effort and design, I traced the disappearance of the industrial era.

The battle between corporate logic and company language—the logic of finance vs. practice, the priorities of accounting vs. production—has been brewing in the workplace for many decades. At the level of the corporation, human development and material production are both subsumed to the dominant goal of financial profit. In the private sector, the gap between financial reasoning and the logic of practice can be most extreme. Therein psychological and legal ownership collide as the workplace itself is radically disrupted by decisions visited upon it from levels of decision making far outside of the interests of human development and even outside of the purposes of material production, outside of the collectivity of work.

The human experience of learning, cultivation, and development always happens in place, while places themselves can be radically changed and even eliminated by decisions remote from these purposes and contrary to their outcomes. Because of this disconnection, ownership and collectivity develop and are cultivated, then torn asunder, as they were here. Exploring the context of work as a troubled and contested social space in terms of psychological ownership, I discovered the root of alienation not in work itself, but ultimately in its loss.

The course of events. The Process Improvement Team associated with the workshop project was disbanded in March 1999. The workshops were almost invisible by the time they were over. Little trace remained (See Figure 9). By April 1999 the only visible evidence of the workshops was an occasional small lone toy gearbox among framed family photos and technical manuals on the shelves and desks of individual

participants and a collection of unclaimed toy gearbox units on the back window ledge of the training room.

Efforts of governance in the workplace contradicted those of the workshop, as company reinvention was increasingly conducted by a newly incoming corporate staff with decreasing input from tenured workers, even while the workshop continued to operate in the training room near the former side-office of the factory. In January of 1999, just before the 2nd round of workshops began, the new president appointed two new executive staff members from outside——one to head the department of Manufacturing and one to head a newly re-instituted department of Manufacturing Engineering. They were charged with the elimination of machinery from the factory floor in alignment with the implementation of a new market based production plan.

In April of 1999, shortly following the workshops, the second focussed factory was under construction. Ten production managers and supervisors were required to reapply for the jobs of supervising machinery and people they had supervised for years. As departments and jobs were once again renamed, supervisors and shop managers were required to submit resumes within days to defend their employment. The Human Resource department, freshly moved to the side-office space, offered to help. The first personnel cut into the managerial workforce occurred a month after the workshops. Four managers including two workshop participants were laid off on a single day. New organizational charts were published and introductions made, including the appointment of a Vice President of Materials, again an outsider, to a newly formed department of his own.

The new org chart showed the focused factories as independent business units and the workplace as a considerably changed organization of functions (Again, see Table 1). From April 1999 through the turn of 2000, the entire vice presidential staff was turned over for the second time within the decade.

By mid August of 1999, machines were being eliminated at an alarming rate, and those remaining were being moved. The most common sign in the shop was a new one, marking cordoned areas throughout the shop floor: "FUTURE SIGHT OF A B (MACHINE / FUNCTION) CENTER" (misspellings and all). As the space was reconfigured throughout the factory, informal work practices became increasingly targeted for elimination, control, and change as well. By September of 1999, the production meeting was relocated to the windowed corporate conference room in the front of the building. On October 5, its membership was reduced to production and planning, and supervisors associated with the support functions of tooling and maintenance, previously Manufacturing Engineering, were disinvited. "No lists," the notice stated.

On October 1, 1999, a Friday, the trophy case housing memorabilia from the old days—photographs of the company and its membership and awards for company baseball teams—was carted away in a dumpster. Symbolic evidence of the past—personal and material—was increasingly targeted for elimination. As objects disappeared and icons were dismantled, memories became targets of semiotic turnover as well. As the past became an object of elimination for the 2nd new president, the email network was taken over as the tool and voice of the new. In the work of silencing, they here articulated the end.

Strategic elimination of the old core in this company across the fall of 1999 included the publication of new professional appointments and policies concerning email surveillance and severance pay as well as organizational rearrangements of the company itself. With the electronic Y2K compliance implemented in the fall of 1999, the cultural workplace came under the corporate electronic eye, and the regulation of individual usage became a primary concern of the new corporate agenda. "...but I was gonna email you, and we have a new thing here where we're not allowed to email outside of the company" (Telephone message, 10/5/99, Planner). Private and social use of company property was outlawed, and electronic messages as well as Internet time were announced to be company property. Examples were made of individuals.

Almost invisibly behind these extreme changes in the social conditions of work were changes of electronic investment on a whole other plane. On October 8, 1999, the engineering drawings from a century of work and design began to be uploaded to their future electronic form. As the library of the factory became electronic data, the final move from workplace to website was truly underway.

On December 10, 1999 over half of a total 160 longstanding salaried workers were notified of their elimination from the company. By January of 2000, 32 of the 48 1998-99 workshop participants—upper and middle managers, supervisors, and engineers—no longer worked for the company. Four had moved to other companies, 1 retired, and 27 were laid off (See Figure 10). Many whose careers were once imagined as a steady climb had experienced the opposite by the end of 1999.

Configuring the end. In 1999, the end of the workplace itself materialized in memos concerning a planned relocation for the year 2002. A series of corporate updates

advanced the narrative of a company relocation plan from July through the fall of 1999. Following the workshops in early-1999, alongside dramatic and continual reductions in the workforce, the corporation planned its next physical relocation and company redesign. A search for the new place was initially launched as formal company news through a single workplace-wide email memo in July of 1999. On September 28, just following a near-strike resolution of contract negotiations with the union, the company president announced the narrowing of the selection to three nearby locations.

By December of 2000, little more than a year later, a totally different version of the future was projected as one focused factory was sold and moved and the other cancelled and as the remaining shop was manned by only a bare and ever-shrinking crew. Nationwide satellite repair facilities were restructured as well, including downsizing and reconfiguration. Over 100 of the 400+ machines on the shop floor were posted for liquidation by February 2000 and 70 of 185 union workers were laid off as well; most of those remaining were gone by March 2001. The Manufacturing Supervisor of Materials was kept till August to maintain inventory stock remaining in the empty factory until its depletion and final redistribution to nationwide repair facilities. By March of the year 2000, most of the machines in the shop had been eliminated and auctioned off and the people who had worked at the company were almost all gone (See Figure 11).

By February of 2001, the property was slated for office real estate development and the company's equipment was divided across repair properties in different states and vended to the ranks of customers and competitors across the market. The remains of the front office, including engineering, finance, sales, and planning employees were moved to the new corporate headquarters, relocated over a year before to a city nearby. The

company's inventory was sprinkled among repair shops across the country and the last public auction of equipment was scheduled for mid September of 2001; it was postponed due to 9/11. In early October, 2002, the railroad bridge behind the old factory was disassembled in preparation for an entirely new building and kind of work to be done there.

All of these choices each unfolding as futures upon ongoing biographical time marked a very different kind of work and a total change of direction from the past of this company—a shift from making to buying, from back to front, from factory to office. The focal shift from design and production to administration and finally to purchasing throughout the 1990's impacted the company and its members in many ways. In a functional sense, the result was high levels of conflict between the goals of front end and back end—of dollars and production, and the ultimate forfeiture of the factory itself.

By the year 2000, in great contradiction to its past, the company repositioned itself as a customer to multiple competing vendors—not just for and raw materials and cut forgings, but for the finished parts and products it could and did once make. This signaled a shift toward procurement as a production strategy that defied the very identity of the company—a tradition of excellence in making customized equipment of the highest quality and range, a unison of creativity and discipline, mastery and innovation in the orchestration of production itself. It marked the new corporate managerial / financial agenda and the essential departure from being in the business of manufacturing itself—the decision to be a piece of it, rather than aiming for the whole.

Ethnography of owned objects. What I learned in this work that I had not learned before was the importance of ethnography that follows and uses experiment (cognitive

simulation, workshop game, or writing activity—all probes) as the light at its back. Using the objects of possessive expression from workshop writing, I mapped the locational, architectural, and organizational history of the place of work in order to understand the ground upon which and from which its members drew and to reread the workplace in light of all I'd learned.

Putting their meanings to use and building a scenario in their language was the challenge of workshop design, but it was through a later process and with a new bilingualism that I sought to understand their words as meanings for them. In constructing historical ethnography and workplace analysis, I oriented to the deeper question of psychological ownership and the history of learning in work life, of the meaning of the shared place of experience, and the shared meanings of a truly collective object of ownership—"our company," their place of work.

To appreciate the contents of collective possession for the value their diversity presents we can look at them ethnographically, assembling a portrait of an operating culture through its participants' possessive expression. Conceiving of culture as a subjective, if object-based, space, objects of possessive expression sketch a portrait of this subjective culture. Culture can be construed as a puzzle of many different pieces, held each ideally in our, and distributed rather than overlapping among individuals, which together comprise an emergent world of work.

Concepts from the real workplace appeared in the possessive expression of workshop writing to mark the game, including technical details that could be pursued for their meaning ethnographically in the workplace and trans-textually in the writing of workshop participants. Some of these objects could be found unpossessed across the texts

of the same or other writers, and their meanings could be further explored through these references and ethnographically elaborated in this way. Following owned objects from workshop writing back into the workplace, history could be reconstructed, its story told. I used the vocabulary of their workshop-owned language to depict the real, to explain the ethnographic, and to teach the reader, who is unfamiliar with their work. I rendered their workshop-owned language as it was written across participants and used this vocabulary of work as a substrate of my portrait of the real. From all I knew, I drew a portrait of the kept, of knowledge, of the internalized cultural landscape and history of the workplace.

Ethnographic re-reading of "our rework." Rework was one of 70 uniquely owned words comprising a cultural portrait of the technical space of work. "Our rework" appeared, like "our bills of material" and many other such technical terms, one time among all the writings of workshop participants. Both texts in which this word appeared were written well into the workshop process and were outcomes of that process.

"Our rework" arose in the description of a conflict among group members during the third week of the workshop activity.

> ONE MANAGER WAS ASKED BY ANOTHER MANAGER TO KEEP TRACK OF THE MODEL NUMBER AND SERIAL NUMBER OF EACH COMPLETED ASSEMBLY AND HE STATED THAT HE DID NOT HAVE TO DO THAT. HE WOULD JUST CROSS OFF THE UNIT ON THE PRODUCTION SCHEDULE. HOWEVER, TIME PROVE(D) THAT MANAGER WRONG WHEN WE NEED(ED) TO MAKE A LIST BY SERIAL NUMBERS TO KEEP TRACK OF OUR REWORK (Group A, Session 3, 3rd writing of 4, Manufacturing Engineer, reassigned to Application Engineering)

"To keep track of our rework" this author argued, entailed the prior step of having tracked the model numbers and serial numbers of each completed unit at the point of shipping. To track rework was in fact to track production itself.

The term rework appeared once in possessive expression and it appeared one other time as unowned in a text authored by a different writer in a different group, "ALSO WE HAD SEVERAL QUALITY PROBLEMS IN THE BEGINNING WHICH CREATED REWORK FOR THE ASSEMBLY AREA" (Group C, Session 3, 3rd writing of 3, Planning). Though "rework" remained unowned in this Group C text, the word occurred in proximity to a synonym of sorts, "quality problems," that appeared as the object of the possessive verb "to have" Further, "rework" itself was allocated to the assembly area as a sub-textual or other-owner.

From the workshop writing and spurred by its singular instance of ownership there, I followed this owned word back into the workplace context, using it as a tool toward a cognitive ethnography of the changing company itself. It was an ideal word to trace because I had already noticed rework in pre-workshop fieldwork of the workplace. I saw its meaning undergo radical transformation in the time that followed. This transformation is detailed next in framing the tragic and true end of the workplace studied here.

"REWORK" could be read on bright yellow neon stickers tucked in the plastic job bags and stuck on parts throughout the shop floor. Rework as a term was used to mark objects of production directly and categorically, and it was used to describe activities as well—objects called and labeled rework as well as the activities of doing the work of rework on these same objects. "The 'Breakdown' sticker designates it is a customer priority rather than internal... Some customer's equipment is not running. 'Assembly Priority' comes before 'Breakdown' when some assembler here is out of work." (8/16/99, telephone interview, Manufacturing Engineer). These stickers were used to bypass the plan, to compete with the dispatch list, called here the "run," which was printed and

distributed to machinists' workstations across the shop floor every Monday. "REWORK" stickers served, like the orange "BREAKDOWN" and yellow "ASSEMBLY PRIORITY" stickers, to expedite the course of particular jobs through production. These jobs did not appear on "the run." Rather than being scheduled, rework was worked in.

Rework is very literally work that needs to be done again. In production, this often entails undoing the first try at the job, and variably so depending on where in the process the problem or need for rework becomes visible. Undoing and disassembly can be twice the job of re-assembly if a part has advanced considerably in its production process. Similarly, repairing a weld (adding metal) can ruin the original. Rework can very often mean restart.

Rework becomes visible at points of inspection after machining and heat-treat of components and before delivery to the customer. Inspectors at these points played the roles of quality assurance after the manufacturing process and of the customer after final assembly. In 1998, rework was most often detected through the attempt at final assembly where incorrect specifications, correctly rendered, could result in gears and their housings out of fit. That is, if three component parts that were due to come together in assembly were perfectly done to their specifications, passing inspections perfectly, but their specifications were wrong, the need for rework would be obvious only at the very end, when both cost and time were already spent. Piping and drain holes were as likely to have been bored in the wrong place because of an incorrect drawing as a misread correct drawing or a machine-setting error in production. This was common as special housing requests conflicted with gear design.

Further, planners were known to bypass inspection in their expedition of parts through the shop on hot orders, and rework needs were very often found late in production, far into the process and well into the costs. For this reason, the assembly area—way out back—was comprised of the oldest men in the workforce, who could make anything work and who could prevent the need for rework of components. They had gained considerable autonomy in their work over decades because of their ability to save the product in the end. They could usually make the pieces fit together in order to contain rework within the final stage rather than sending the whole job back—thereby rescuing the company from significant cost.

Logically and practically, the problems that lead to rework may come from engineering, such as an incorrect specification, or from the process of production, as in failed heat treat results. As jobs were seen circling back in production, the diversity of its sources along the entire course of an order's life posed a significant challenge to the overall tracking and true reduction of rework in the company. Rework was as likely to be a consequence of precision as of error, but in all cases it revealed a limited horizon or a blindness of the whole, a gap between engineering and production, a problem to be solved. For this reason, rework was conceived as a source of performance feedback to engineering as well as to production.

In 1995, the tracking of rework and its documentary correction had became a project and goal of the engineering department itself—initiated and conducted by old timers as an evolutionary approach to workplace improvement. Instituted as a job in itself, rework tracking had been assigned to an old timer reporting to the Vice President of Engineering, the only long-tenured member among the new executive staff. This new

job served as a mechanism for refining the engineering-production relationship. It was a long-term corrective effort to counter years of documentary degradation, losses of shop floor skill generations to the layoffs of the 1980's, and the elimination, addition, and relocation of machinery associated with the shop floor overhaul of the early 1990's. Rework tracking involved closing the loop from production where rework is generated (usually via inspection) back to engineering where the need for rework might be avoided next time, righted in design.

The long term goal was for the details of every design to be revisited and corrected as they came up for production over the years in the form of "same as" jobs, new orders based on old gear designs, which constituted over half of the work done by the factory. Changes in the shop floor layout as well as in engineering methods alongside customer-initiated alterations of design all contributed to the out-of-synch relationship between old designs and new needs that could result in rework. Routing Planners from the former Manufacturing Engineering department were involved in editing production path details before jobs began; but the rework-tracking job was in place to catch those that had problems nonetheless. By the spring of 1998, some 40,000 designs in the technical library had yet to be revised, but the effort of rework tracking was an official project and a singular job in itself.

The objects being tracked were those with problems in the process of production, and their source was seen as an out-of-fit relationship between engineering and manufacturing. In 1998, rework and the costs associated with it were associated with the growing gap between front and back—an emerging polarity of effort in the workplace between the administrative and the material, the plan and its execution. The tracking of

rework was a concerted effort by 1998, one among many practices instituted over the years to compensate for failures and gaps between the formal system and the degraded informal system of transfer and expedition among departments.

From April through September of 1999, an increasing new source of rework was the 2nd new focused factory, a cluster of machines set up in the unused pattern shop that was charged with a single order for hundreds of the same part. Unable to standardize its production adequately, this focused factory had alarmingly high rework rates by September and had been unable to ship a single delivery on time. By October, the order was cancelled altogether and the focused factory became obsolete except as an asset cluster for sale.

The corporate agenda in 1999 revealed itself as it unfolded inside the changing meanings of key production concepts in the workplace, inside the material details of the technical realities and textual practices of peoples' work, knowledge, and activity, and in the literal rearrangements of context itself. Most illustrative among these subtle but powerful changes in word-reality relationships were shifts in the meaning of "rework" over the course of the workplace's final year. Framed as an opportunity for process improvement until 1998 and in the workshop itself, rework became a symbol of the end of the workplace by August 1999.

As the company increasingly outsourced its own production work in 1999 and sold off machines from 1999 to 2001, the meaning of rework fundamentally changed. As manufacturing was increasingly farmed out to outside vendors across the end of 1999 in corporate efforts to reduce cost and overhead, the part to be reworked was no longer their own. What changed was the relationship of the company to the work itself, as production

was reduced to the reworking of work it had not originally done. By late 1999, the objects being tracked and marked with "REWORK" stickers indexed a totally different referent than they had the year before. Rather than reworking parts from which they could educate the process of their production, they were reworking vendor-made material.

Where it had been a condition of the age of the place and its historic internal losses that engineering and manufacturing were out of synch, by mid-1999 these departments were divided by the actual object of their attention and labor as well as their point of view. That is, each department used different tools to mediate their relations to a common object of labor: the gear itself. While engineers used computer drawings, planners use management technologies, and manufacturing used machines to mediate their relationships to the product of labor, they all had shared a focus on the same gear over its course of design and production.

By August of 1999, production was reduced to rework, and managers across departments were no longer even likely to recognize common orders of concern. Conceived as source of work performance feedback in until 1999, rework emerged as the index of outsourcing itself and became a symbol of the end of the workplace. In terms of the work to be done, it became all that was left. In the fall of 1999, rework constituted an increasing reminder of the loss of work. As manufacturing work was increasingly farmed out, the machining that remained was generated from the stock room, recently relocated from the center of the workplace to the receiving deck far in the back, upon the reception and inspection of vendor-made parts. Rework in the context of this workplace underwent a deep cultural and semiotic across the period of time I witnessed.

The outsourcing of work reduced the use of the machines that once ground gear teeth to the rework of gears made and machined by others. This rework was a symptom of the final loss of coordinated action in real time and place between part design and part production—engineering and manufacturing—as these two domains were separated, not only by function, but by location and object of work. What changed in 1999 was the source of the part beneath the "REWORK" sticker. What the term, and likewise the sticker, referred to underwent a change—the object beneath it, the real—and this changed the meaning of the concept itself subtly, but radically. What changed was the location of its actual production from in-house to vendor-made, and, thereby, its significance as an object taking space on the floor of the shop. What changed was the authorship of its production.

In the details of experience, changing meanings unfolded as a kind of breakage between sign and referent, a semantic and material shift. These transformations emerged through the very rearrangement of the workplace itself as shifts of the relationship between reference and reality. As the place was eliminated underneath the work inside it, old words accumulated new referents, new qualities, and new meaning. Word meaning changes not based on the exercise of semiotic power alone, but by the actual changing of the world of referents, the world of the real, the actual products of labor, to which words must accommodate and meanings conform. They do this not by changing their sound, but by shifting their indexical ground.

Possessive expression: Belonging and belongings. "Yup, those machines are mine. I bought them," (11/13/99) said a technical manufacturing manager nine months after the project described in this dissertation and a month before his termination from

this century-old gear manufacturing company. Referring to purchasing power associated with the Manufacturing Engineering leadership role he had occupied three years earlier, this manager recalled a past of empowered expertise in use at work. Claiming industrial equipment in words, he coupled the personal metaphorical mine ("... are mine") with economic action ("I bought...") and illustrated the cultural and semantic ambiguity set into motion by the textual coincidence of monetary and metaphorical meanings of ownership in possessive language.

The alignment of experiential ownership and economic activity in claiming property through purchase obfuscates the managerial contradiction that capitalism entails in which the power to purchase, the capacity to earn, and the developmental opportunity to claim depend upon another owner of a fully different kind. Masking the economic owner of the company itself, the juxtaposition of possession and purchase hides the managerial contradiction of work in plain sight and illuminates the semiotic contest and semantic complexity of objects imbued by the intimate distinction of use, possessive expression, in the context of the other-owned, if continually re-authored, place of work.

The power of possessive expression is its capacity to precipitate and if captured preserve an artifactual moment. By signing activity and authoring work, possessive expression uniquely marks objects by the sign of their use and illuminates their content by the subjective light of activity. It indexes experiential time as well, as does its absence signify loss. In a radical loss of ownership across the months that followed, he described the end of the company in response to my query: "I went to the website and saw the incredible slide show of machines. Tell me about them. Tell me about what's gone."

> The list of machinery is both tragic and awesome... XGC will no longer be able to do very small gears, or very large gears. They will not be able to Shave any

> Teeth at all. XGC will not be able to make traditional hardware items like caps, studs, bearing cartridges or even spacers. It is doubtful they will even be able to "fix" the stuff coming in from their precious vendor corps... XGC can/will no longer make Housings of any type, and of course, the same scenario about rework applies. The short story is that they will be re-packagers of other people's efforts. The chances of being able to survive in the gear business with no internal capabilities is slim and none (Email interview, 2/23/00, Manufacturing Engineer).

"I bought that one, I bought that one..." (Telephone interview, 8/23/01), he continued two years later as the Director of Manufacturing in another industrial company. Reviewing the electronic catalog of a final machinery auction scheduled for September 11, 2001, listing the very same equipment he had earlier claimed, he considered its purchase for the company that next employed him. Upon returning to his old factory to inspect the machine, he discovered a plastic job bag full of machinist drawings and notes in its cabinet and sent them to me. "It was important that someone like you saw what happened, and wrote it down" (6/23/00, telephone interview, Manufacturing Engineer), he had told me. I have been deeply privileged to be the one.

Table 1. Workshop participants according to organization charts of 1998 and 1999

1998 Departments	# in dept	% of dept in workshop	# in wrkshp	# in wrkshp	% of dept in wrkshp	1999	1999 Departments
Financial	18	0.17	3	2	0.13	15	Finance
Human Resources	5	0.2	1	1	0.16	6	Human Resources
Manufacturing (admin)	19	**0.68**	13	11	0.33	33	Manufacturing
Manufacturing (shop)	19	0.42	8				
Marketing	4	0.5	2	13	0.33	40	Sales and Marketing
Sales	31	0.16	5	2	0.08	26	Field Sales
Technical (Eng.)	44	0.36	16	6	0.25	24	Technical
				5	**0.83**	6	Focussed factory 1
				2	**0.66**	3	Focussed factory 2
				3	0.5	6	Material
				3	0.5	6	Quality
				0	0	4	Other facilities
Totals	140		48	48		169	

Table 2. Workshop group composition and writing participation by job category

Workshop group composition	D	A	B	C
Vice President	3	1	1	
Planning	1	1	3	2
Design Engineering	1	2	2	3
Application Engineering	4	5	1	3
Manufacturing Engineering	2	2	4	3
Manufacturing Supervisor		2	2	1
total participants per group	11	13	13	12

Writers per group	D	A	B	C
Vice President	2		1	
Planning	1		2	1
Design Engineering		2	2	2
Application Engineering	3	3	1	2
Manufacturing Engineering	2	2	1	2
Manufacturing Supervisor		2	1	1
total writers per group	8	9	8	8

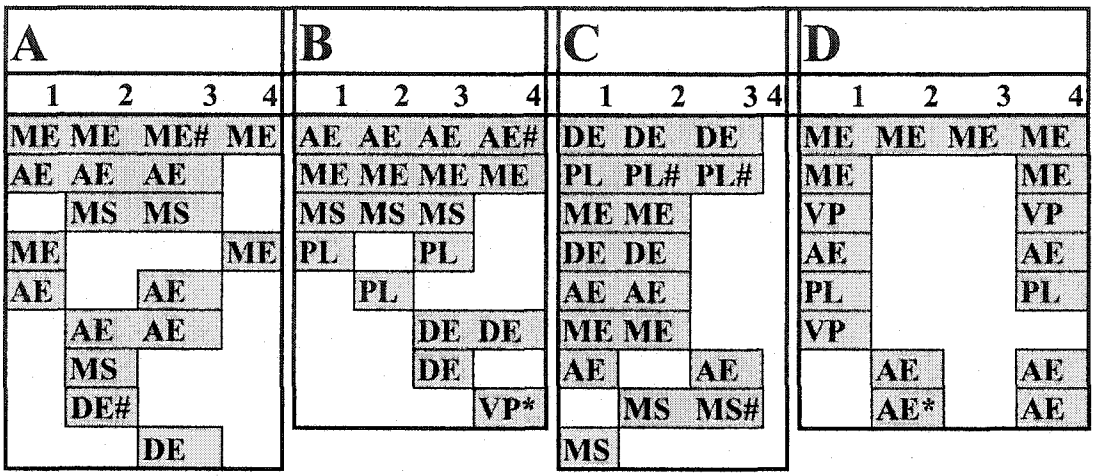
Nonwriters per group	D	A	B	C
Vice President	1	1		
Planning		1	1	1
Design Engineering	1			1
Application Engineering	1	2		1
Manufacturing Engineering			3	1
Manufacturing Supervisor			1	
total nonwriters per group	3	4	5	4

Table 3.

Appearance of elicitation probe objects (in textual sequence) as owned in workshop writing (Group A, B, and C participants only), by ethnographic job category

	DE	AE	MS	ME	PL	VP
YOUR GROUP (x2)		2 our	3 our		2 our	4 our
YOUR ROLE			1 my	2 my	1 our	
			1 our			
YOUR JOB				1 my (real)		
YOUR TOOLS AND PROCESSES			1 our			
YOUR INVENTIONS				1 our		
YOUR TRACKING SYSTEMS				1 our		
YOUR MACHINES						
YOUR PROGRAMS						
YOUR DESIGNS						
YOUR COMPANY (toy) (x2)					1 our	1 our
YOUR EXPERIENCE (x2)						

Table 4. Writing participation patterns by workshop group across sessions identified by job category



# indicates artifact document attached
* indicates sales letter

Job category/ Work code Key		Writers	Texts
MS	Manufacturing Supervisor	5	9
ME	formerly Manufacturing Engineering	7	20
AE	Application Engineering (Sales and Service)	9	21
DE	Design Engineering	6	10
PL	Planning	4	8
VP	Vice Presidents	3	4
	Total	**34**	**72**

Table 5. Workshop writing participation and frequency by workshop group

Workshop group	**D**	**A**	**B**	**C**	**Total**
Total participants	11	13	13	12	49
Total writers	8	9	8	9	34
Frequency of writing					
Wrote once	1	3	3	1	9
Wrote twice	6	4	2	6	17
Wrote 3-4 events	1	2	3	2	8
Total texts	17	18	18	19	72

Table 6. Summary of writing frequency across ethnographic job categories

# texts	# writers	Work group	Code	Frequency of writing #texts / #writers
9	5	Manufacturing Supervisor	MS	1.8
20	7	Manufacturing Engineering	ME	2.9
21	9	Application Engineering	AE	2.3
10	6	Design Engineering	DE	1.6
8	4	Planning	PL	2.0
4	3	Vice Presidents	VP	1.3
72	34			

Table 7. Frequencies of pronoun strategies across all texts

Pronoun Profile	# of texts using profile
only Our	0
only My	0
I, We, My	1
We, My, Our	1
I and We	2
I and Our	2
I, Our, My	3
only I	3
I and My	3
only We	3
None	7
We and Our	10
We, Our, and I	16
We, Our, I, My	20

Table 8. Overall shift of pronoun profiles from 2 to 3 pronouns in use

Serial writers (N=25): First and last writings	**First writing**	**Last writing**
Total pronoun kinds (/4) across 25 writers=#/100 possible)	58	75
Average # of pronoun kinds used per writer (/4)	**2.3**	**3.0**

Table 9. Developmental view: Pronoun strategy change across texts for serial writers

#/4 Pronoun Kinds Used	**Increase**	**Same #**		**Decrease**
		Qualitative change	No change	
2-time writers N=17	7	3	4	3
3-time writers N=8	3	1	4	0
N=25	10	4	8	3

Table 10. Shifts in pronoun profiles from first to last writings: % and quantity of pronoun kinds

Serial writers N=25	**# of pronoun kinds / 4 (we, I, our, my)**				
% of texts (/100)	0 / 4	1 / 4	2 / 4	3 / 4	4 / 4
1st writings	8%	20%	32%	12%	28%
Last writings	4%	4%	16%	40%	36%
# of texts (/25)	0 / 4	1 / 4	2 / 4	3 / 4	4 / 4
1st writings	2	5	8	3	7
Last writings	1	1	4	10	9

Table 11: Our rates compared to other possessive terms across workshop writing

	My Rate	Other-own Rate	**Our Rate**	Total own Rate
N=34				
Range	0 (15) - 1.8 %	0 (9)- 2.1 %	**0 (4)- 3.8 %**	0.47- 5.03 %
Mean	0.34 %	0.52 %	**1.2 %**	2.07 %

Table 12. Statistical summary of pronoun relations in writing across sessions

	Pearson Correlation	Significance
Our: Session (N=34)	0.24	0.049 **
We : Our	0.414	0 *
I : My	0.361	0.002 *
We 1st writing : Our 1st writing	0.364	0.034**
I 1st writing : My 1st writing	0.375	0.029**
Our 1st writing : We later writing	0.363	0.035**
We later writing : Our later writing	0.391	0.022**

** Correlation significant at the .05 level
* Correlation significant at the .01 level

Table 13. Significant correlations between rates of our and company experience variables

Company tenure: our	Pearson Correlation .478*	Sig (2 tailed)=.004	N=34
Job category : our	Pearson Correlation .467*	Sig (2 tailed)=.005	N=34
Company tenure: job category	Pearson Correlation .495*	Sig (2 tailed) =.003	

*Correlation is significant at .01 level (2 tailed)

Table 14. Object kinds owned according to participant work/job categories

(Group D separated in parentheses)

	technical	identificatory	evaluative	self
Design Engineers	16 (1)	5	10	5 (2)
Application Engineers	18 (1)	9 (3)	2 (3)	5 (1)
Manufacturing Engineering	15 (45)	2 (15)	4 (4)	10 (10)
Manufacturing Supervisors	7	6	1	10
Planning	10	6	4 (2)	3 (1)
Vice Presidents	1 (3)	2	0 (1)	0

Table 15. Owned Object Kinds (Our & My) distributed across workshop groups

group/session					
	Technical	**Identificatory**	**Evaluative**	**Self/Personal**	**sum**
A1	0	2	1	6	**9**
A2	7	4	2	3	**16**
A3	20	14	4	3	**41**
A4	3	4	0	0	7
B1	2	0	1	3	6
B2	5	1	0	3	9
B3	5	1	2	2	10
B4	3	7	2	4	16
C1	9	6	2	6	23
C2	6	8	2	2	18
C3	6	1	5	1	13
C4					
D1	12	4	0	0	16
D2	12	7	1	1	21
D3	26	7	9	13	55
D4					
Sum	**116**	**66**	**31**	**47**	

Table 16. Our: Shared owned objects per workshop group by degree of repetition

Key:
Inter-group repetition shown by workshop group
Intra-group repetition marked in bold
Intra-group inter-individual repetition marked in italics

Degree of sharedness across workshop groups	D	A	B	C
4/4 groups	**Customer**	***Customer***	**Customer**	**Customer**
3/4 groups	**Company (toy)** **Problems** **Selves**	***Company (toy)*** ***Group*** ***Problems*** **Selves**	 **Group** ***Problems*** ***Selves***	**Company (toy)** ***Group***
2/4 groups	Ability Capacity Capabilities Factory Improvements Inventory Mistakes Parts *Processes*	 Business Capabilities Company (real) Mistakes Orders Parts	 Business Capacity Company (real) Factory Inventory Orders Processes	Ability Improvements
My	***Self*** ***Opinion*** ***Role*** Time	***Self*** **Opinion** **Role**	**Self** **Opinion**	**Self** ***Opinion*** **Role** Time

Table 17. Uniquely owned technical objects per group per session

	D	A	B	C
1	2 digit part numbers Strategy Vendors Cycles			Ability to purchase Entire material flow Final assembly people Inherited business Manufacturing efforts Own manufacturing Pricing strategy Shop
2	Final assemblies Manufacturing limitations Objective Operations Process Process improvements Products Quality Sense of what was required	Manufacturing and assembly areas Production goals Strategy meeting	Bottleneck Manufacturing processes Pricing	A+ painter Goal Inventory control person President Standard gearboxes
3	Business cycle Customers' desires Customers' requests Errors Internal schedule Little enterprise Money Organization Own problem solving techniques People Performance capability Post-assembly finished goods Potential Purchased material and parts Resources Scheduled activities Zero inventory effort	Bills of material Current capacities Deliverables Flexibility Inability to Initial stock order Inventions Inventory availability Process and planning Production capability Quality standards Rework Tools Tracking system Units Workmanship	Order entry Sales Throughput	Actual performance results Delivery performance Execution Manufacturing people Process problems Salesman
4		Assembly Enterprise Housing expert Whole production area	Response time Own systems	

Table 18: Identificatory owned terms across groups: Naming the workshop

	Textual instances	**D**	**A**	**B**	**C**	**Instances/ writers**
Shared owned identificatory terms	Ourselves	x	x	xx		4/3
	Our group		xxx	x	xx	6/3
	Our company	x	xx		x	4/3
	Our business		x	xx		3/2
	Our factory	x		x		2/2
Uniquely owned identificatory terms	Our shop				x	1/1
	Our gearbox company		x			1/1
	Our make believe enterprise	x				1/1
	Our inherited business				x	1/1
	(our industry) (real)		x			1/1
	Our enterprise		x			1/1
	Our class				x	1/1
	Our team		x			1/1
	Our little enterprise	x				1/1
	Subtotals per group: Instances/words	5/5	11/8	6/4	6/5	

Table 19. Use of "our company" across groups by session

Use of "our company" across groups by session				
Group/ session	D	A	B	C
1	1 game			1 game
2		1 game		
3		**2 real**	**1 real**	
		3 game		
4		3 game		

Table 20. Use of company name in workshop writing: # of writers per workshop group

Company name Page framing appearance	**D**	**A**	**B**	**C**
Company graph paper	0	0	1	5
Company letterhead	1	0	0	0
Typed title of Memo page	0	0	0	2
Subtotals across texts	**1**	**0**	**1**	**7**
Company name Internal text reference (instances/individuals)				
-XGC	1/1	1/1	2/2	5/4
-X____ Gear Corporation		1/1		
-X____ Gear				1/1
-x__y gear			1/1	
-x__a gear			1/1	
Subtotals across individuals	**1/1**	**2/1**	**4/3**	**5/5**

Figure 1. On and off the org chart: Company tenure trends across the hierarchy

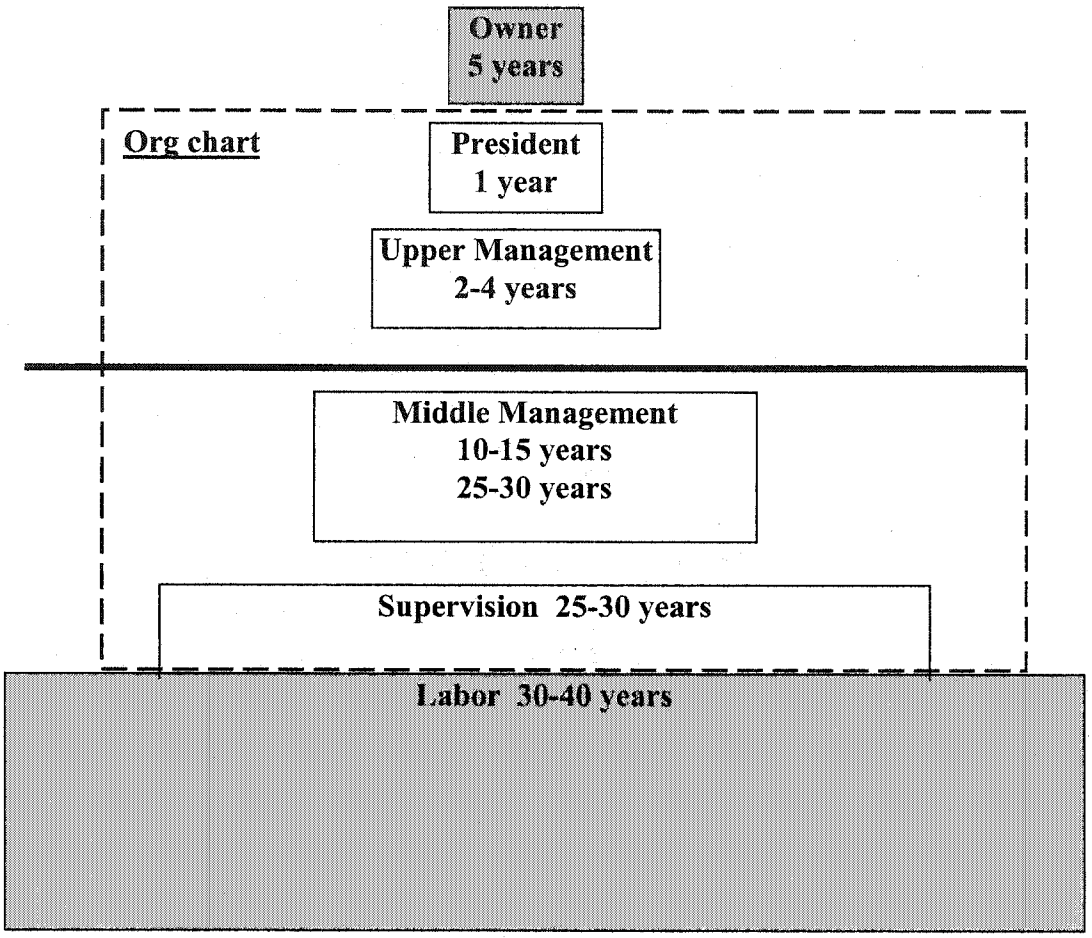


Figure 2.
Managerial relations to owner and labor

Representational and proprietary divides among owners, managers, and workers, in the hierarchical order of the formal organization

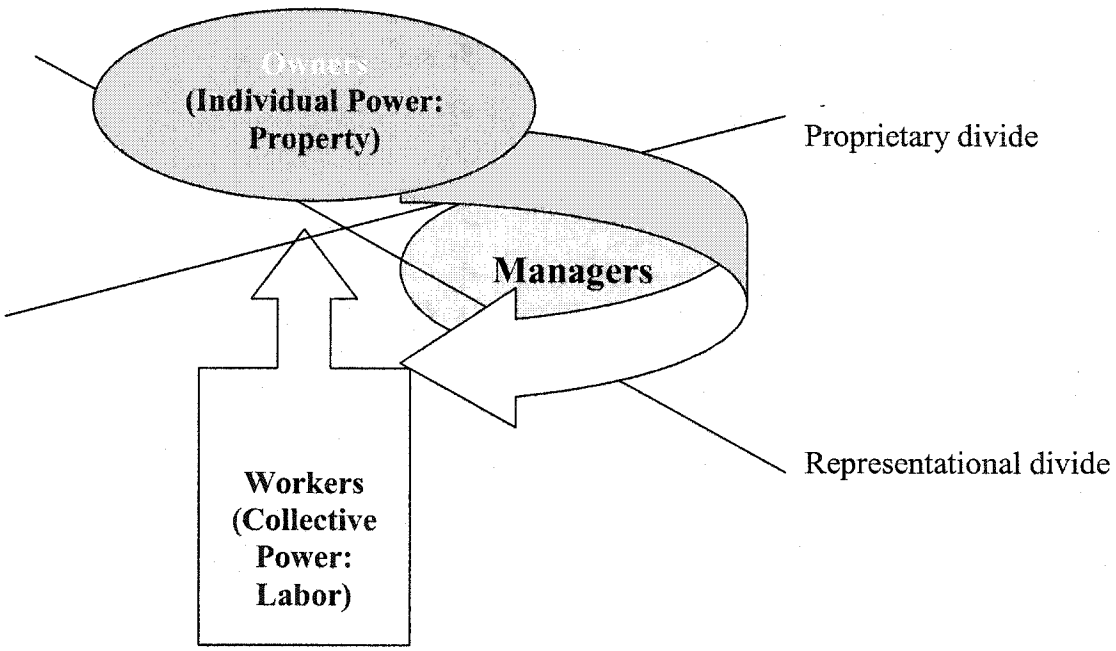


Figure 3. Workplace History Summary

1960 1986/7 1992/3 1999

1960 Move into new building

1966 Death of 1st Owner

1986 Parent financial corporation formed

1987 Layoffs and strikes

1992 Company centennial

1993 Death of 2nd Owner

1994 1st New President

1995 Cubicalization of front end,

Elevation of Planning,

Implementation of electronic network

1996 Elimination of Manufacturing Engineering

1997 Formation of Marketing

Reorganization of Sales and Engineering

1998 Process Improvement Project

2nd new President

Implementation of focussed factories

1999 Company elimination

Figure 4. Shop map (adaptation of blueprint with informant process drawing)

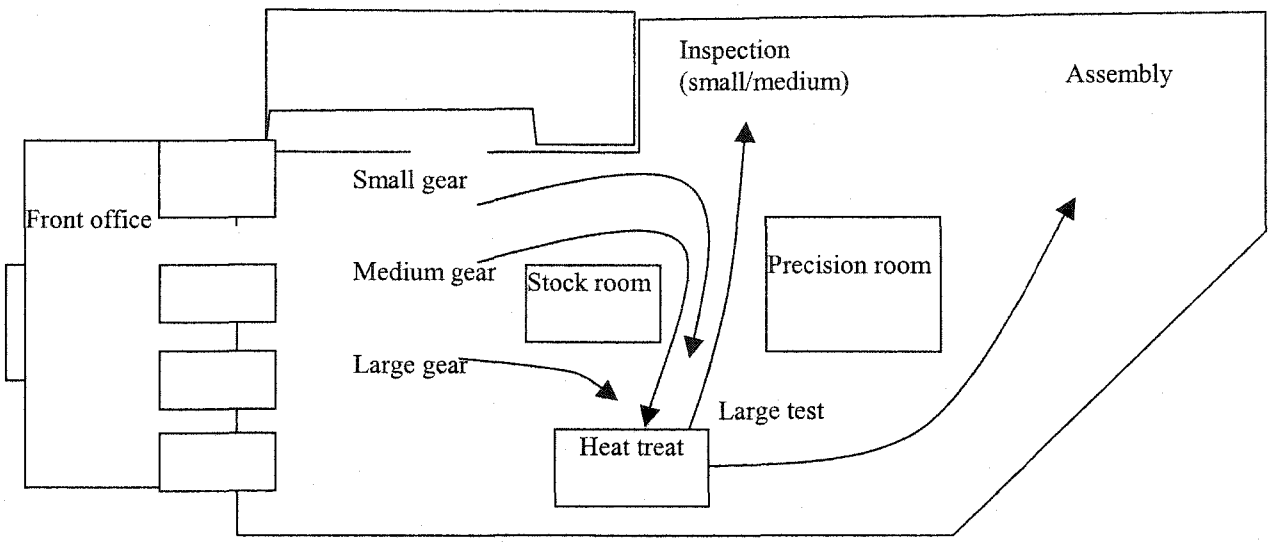


Figure 5. Schedule of research

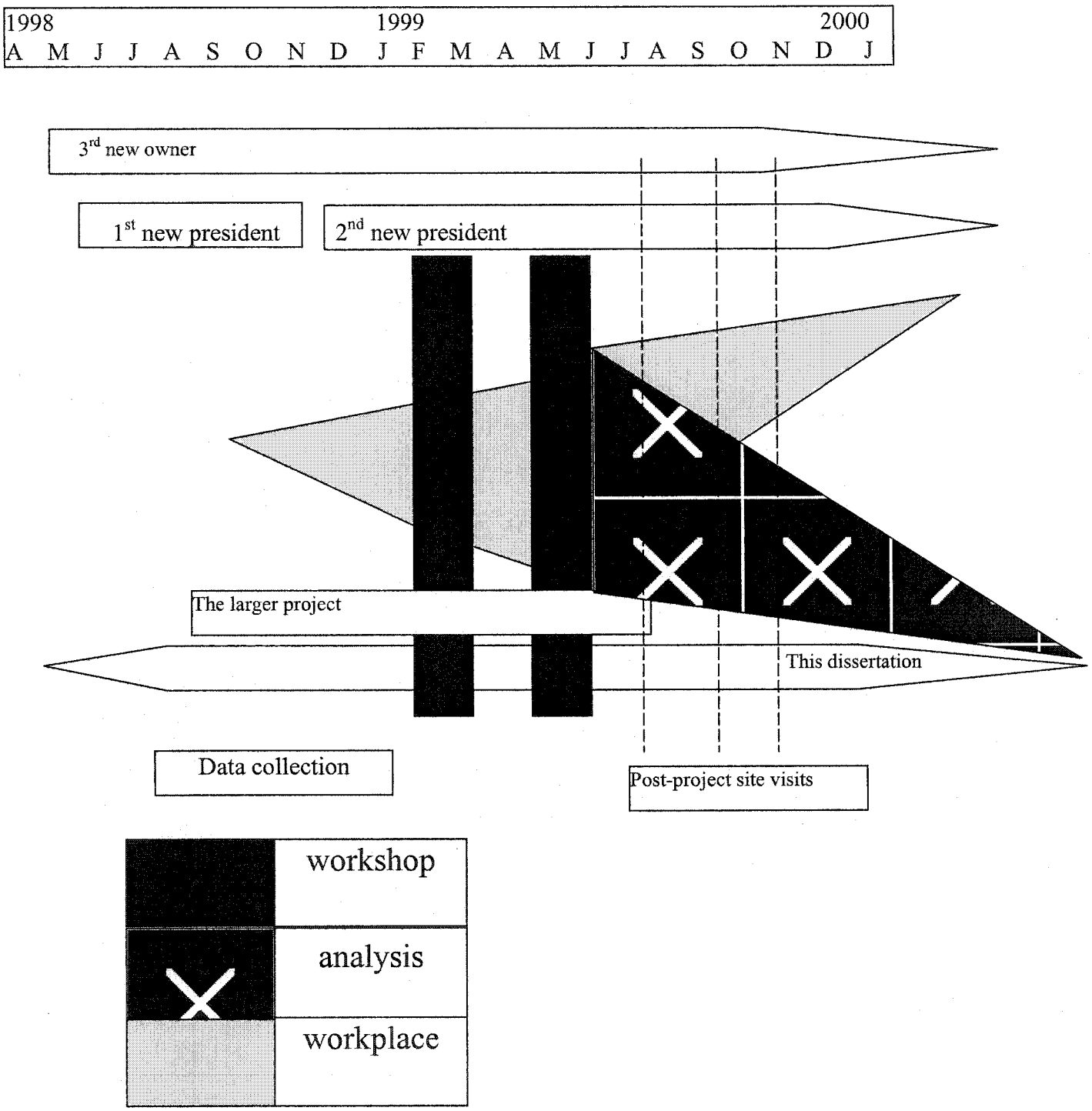
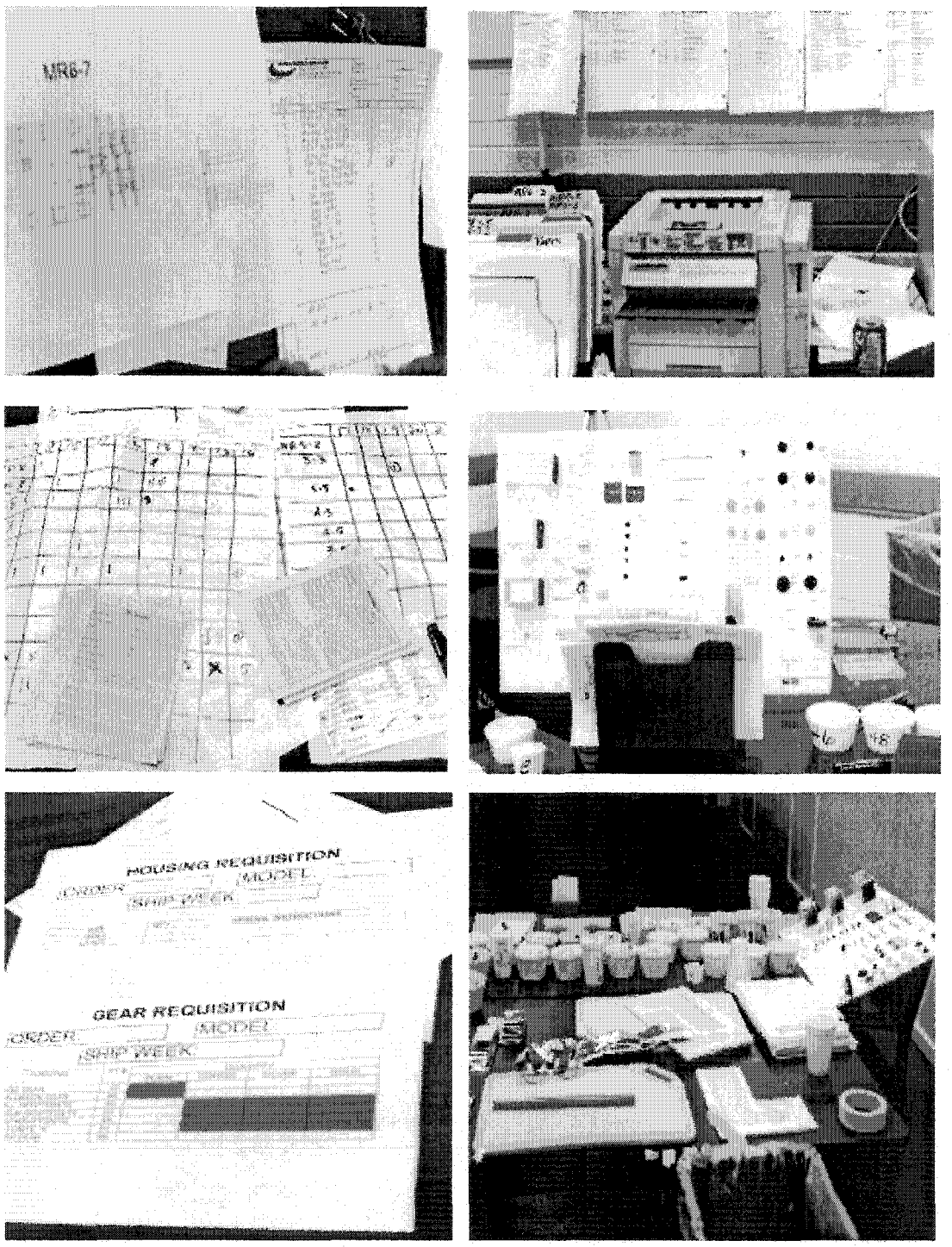
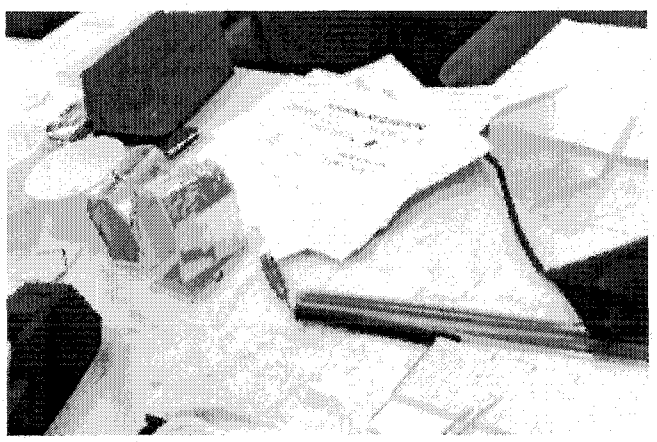
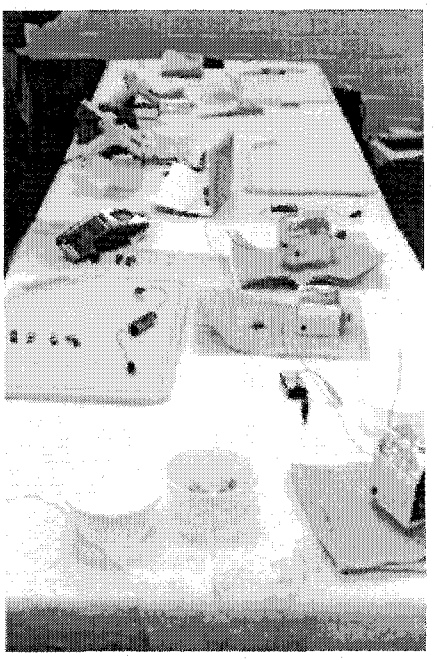


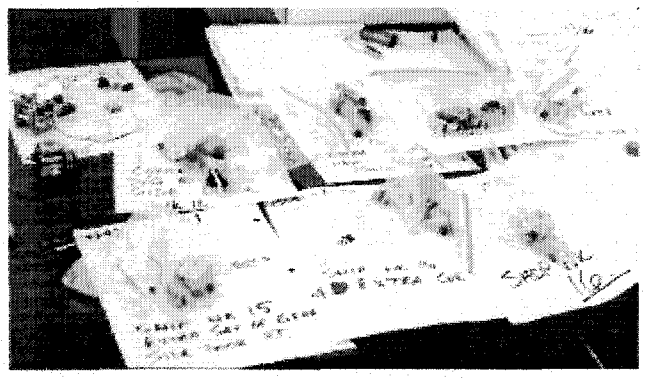
Figure 6. Workshop as context of study: Making toy gearboxes

Planning, Manufacturing, Production (Assembly)









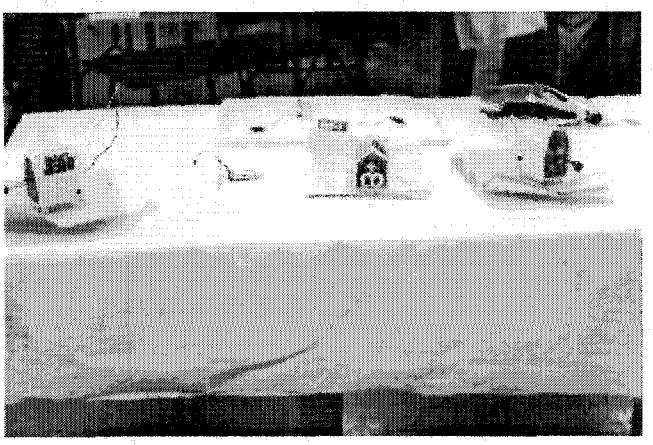


Figure 7. Our ratios vs. Our totals by job categories: Psychological vs. ethnographic measures

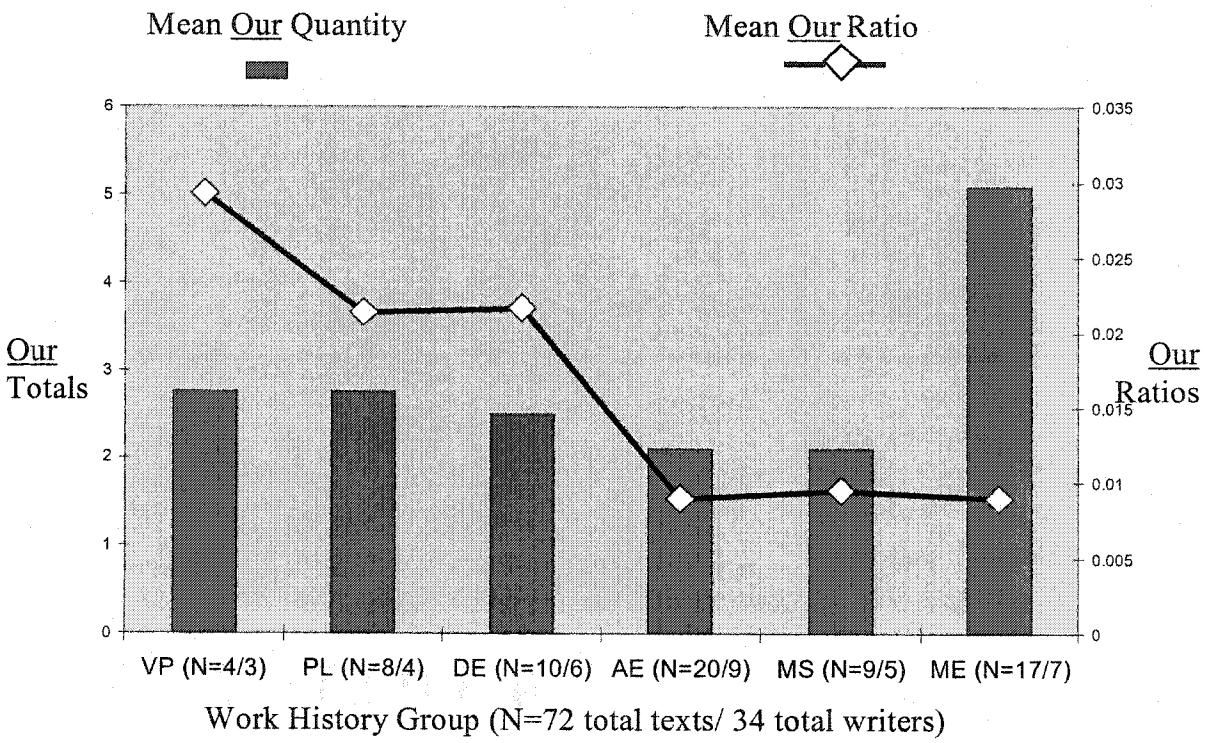


Figure 8. Distribution of owned object universe (pie) across job categories

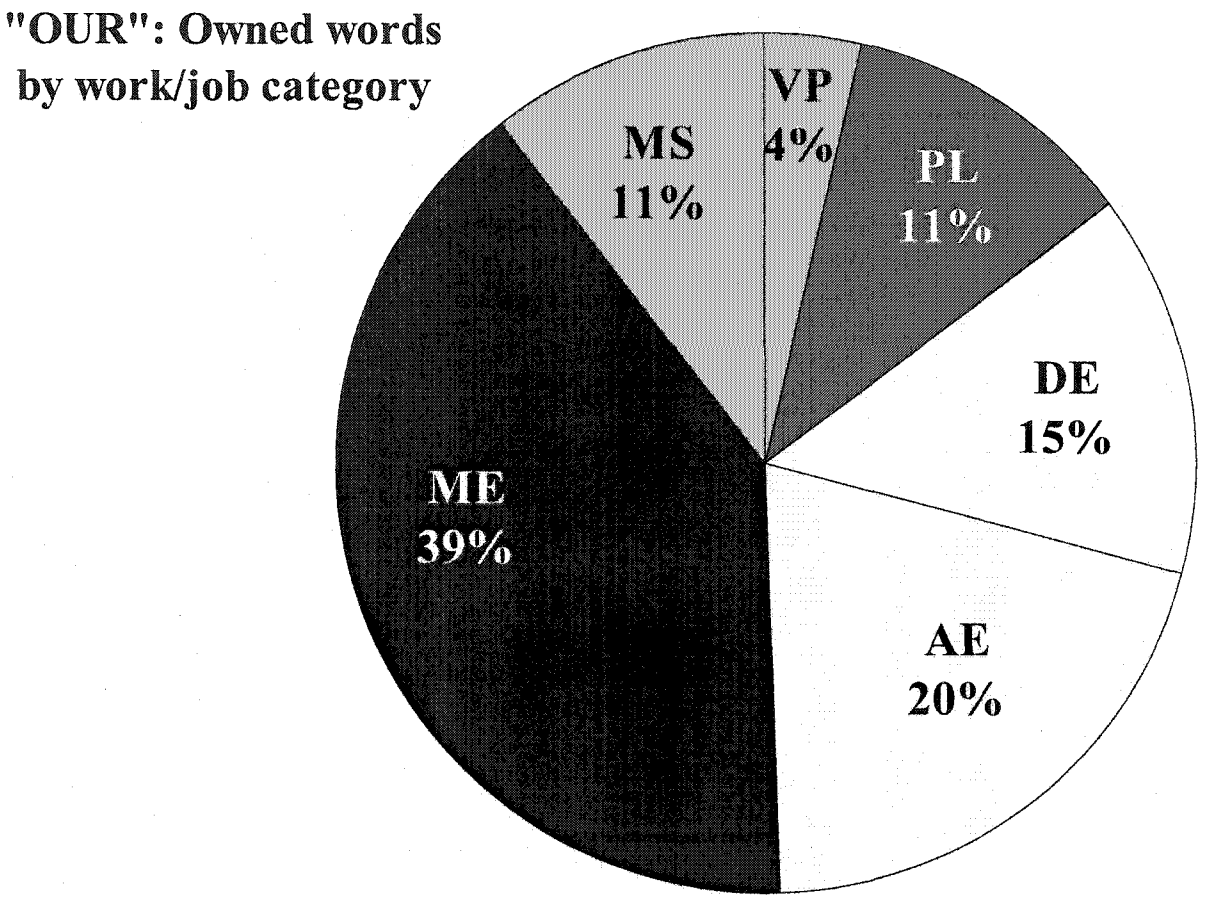


Figure 9. After the workshop: What remained

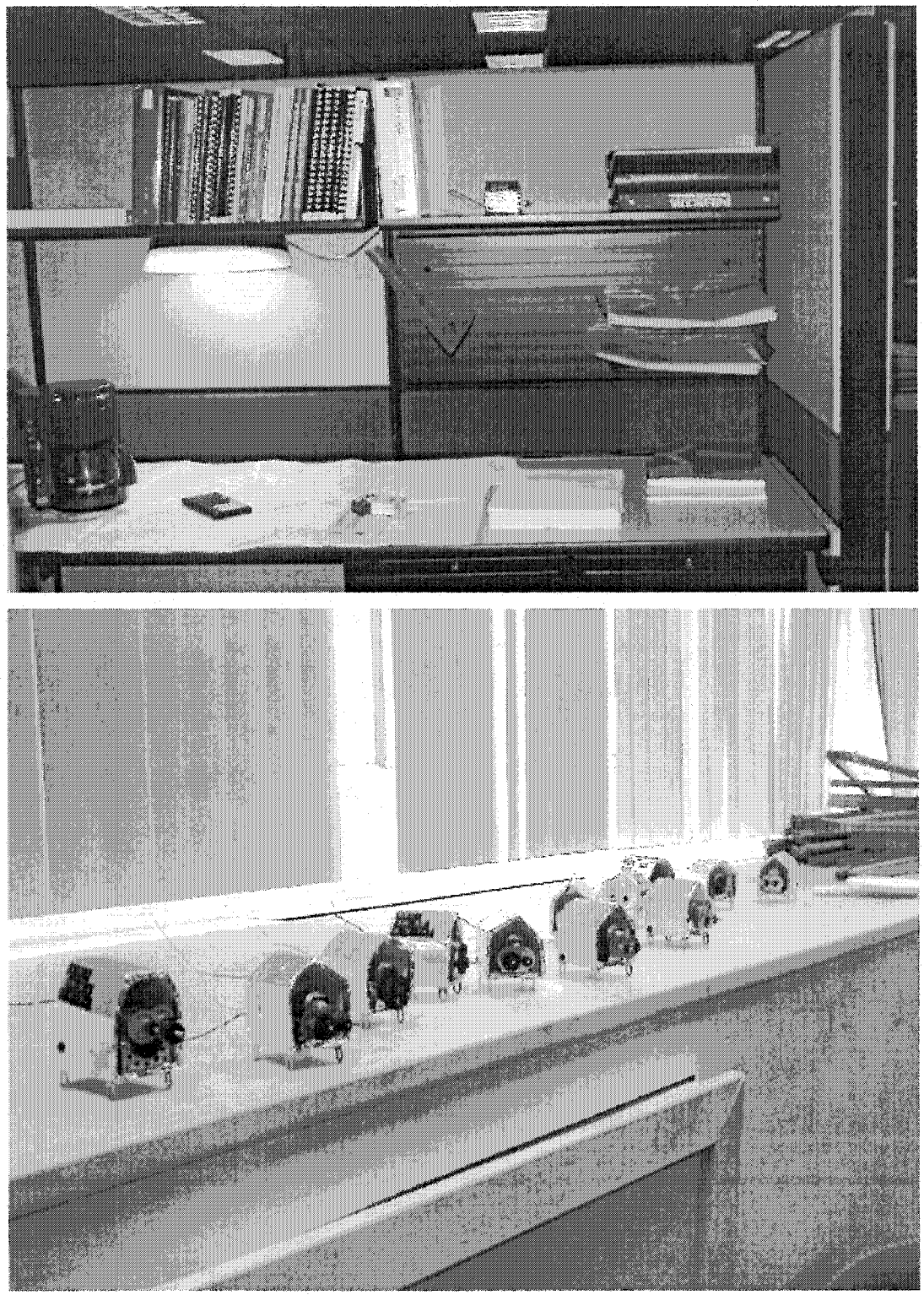


Figure 10. Following a voice through the end

We will be out of here before the end of January and there will be no x__y gear. We'll no longer be called x__y gear ever again. (8/10/99).

They're acting like they're going to war. These are 50 and 60 year old men, just like us...Floodlights arrived last night. They're gonna light up this property like a prison. (9/7/99).

Joe's gone. The end. (9/17/99).

They're taking the trophy case and trashing everything that was there... They didn't want us to have any history here... That was our stuff! (10/1/99).

So like everyone else, I'm going to do my duty diligently until three o'clock, until I find out what—what the story is. And as usual, I will forward them to you in any case. This last little bit of mind screwing.
(12/10/99, phone message, 2:30 p.m.).

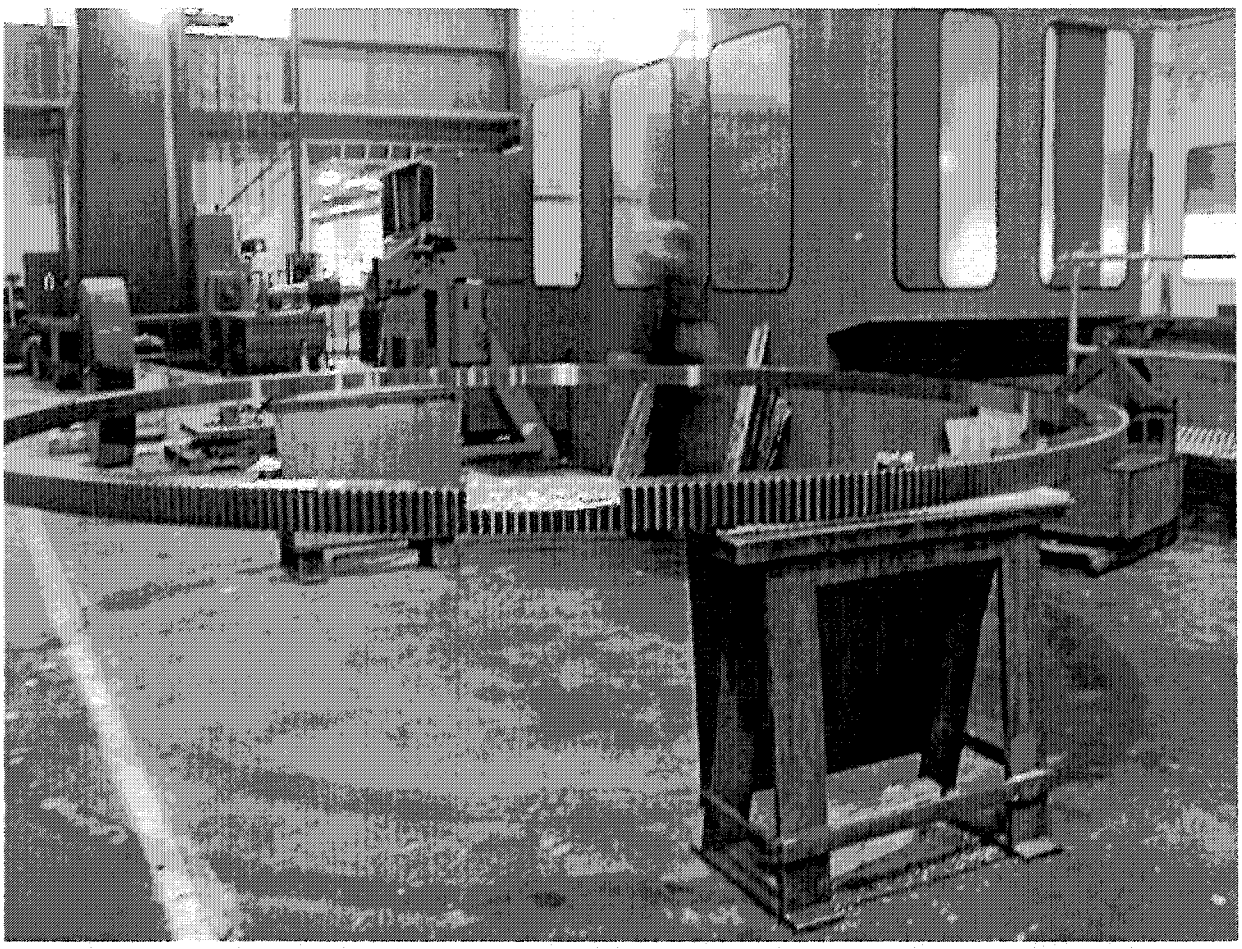
I just got a copy of the NEW Organization Charts...My job is not there anymore. (12/10/99, email message, 3:30 p.m.).

I didn't lose this job, it lost me. (2/18/00).

It's not we. It's not we anymore. (11/23/00)

Figure 11. Worker and work: The ghost in the machine

That was the only machine of its kind here, so he had a special place. (8/26/99)



...we talked about the personalities of these machines—and the people were the same... Their personalities had to be taken in as part of the equation to do the work. (2/17/00)

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