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THE AMBIENCE OF INNOVATION:
A MATERIAL SEMIOTIC ANALYSIS OF CORPORATE AND COMMUNITY
INNOVATION SITES

by
Reed Stratton

A Dissertation Submitted in
Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy
in English

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May 2016

ABSTRACT

THE AMBIENCE OF INNOVATION: A MATERIAL SEMIOTIC ANALYSIS OF CORPORATE AND COMMUNITY INNOVATION SITES

by

Reed Stratton

The University of Wisconsin-Milwaukee, 2016
Under the Supervision of Professor David Clark

There are unprecedented opportunities in professional and technical writing (PTW) and rhetoric research thanks to a contemporary expansion of rhetorical studies beyond the linguistic/symbolic and into the material, accounting for the rhetorical contributions of “nonhumans” (Latour *Reassembling the Social*). Material rhetoric frameworks such as Thomas Rickert’s ambient rhetoric and Bruno Latour’s actor-network theory, provide fertile grounds for PTW/rhetoric research that explores the diffusion of “rhetoric into material space” (Rickert xii) which has especially exciting implications for the study of place and how it embodies values and rhetorically shapes acting, thinking, and the entire spectrum of “human flourishing” (Rickert xii).

This renewed interest in the rhetoric of artifacts and how they unite to enact agency within material spaces correlates with an enduring PTW/rhetoric interest in the process that creates things: innovation. The rhetoric of innovation analyzes the complex communication process involved with generating, conveying, and transferring ideas into marketable technology products (Doheny-Farina; Akrich, Callon, and Latour).

This work, then, contributes to contemporary PTW/rhetoric research by applying commitments of rhetorical material-semiotics to innovation to understanding the context of

innovation and the role of place in ideation. My underlying rhetorical interest within these spaces is the generation, communication, and dispersal of agency during ideation. I explore this process from three perspectives: how the designers of innovation spaces and workshop leverage material context to convey values of innovation; how the artifacts within innovation spaces enact agency upon facilitators and participants to shape their approaches to the innovation process; and how agency is symmetrically distributed across a network of human and nonhuman actants during real time ideation.

My project analyzes innovation workshops, brainstorming sessions, and strategic planning sessions, within eight material spaces designed to cultivate creativity through different material means. These spaces are diverse as are the sessions I observed, but, across all of them, I apply a mix of observation, interviews, and ambience descriptions in order to pursue the answers to my research questions and uncover insights about the dispersal of agency within innovation spaces.

My analysis of these spaces has numerous implications for PTW/Rhetoric scholars in its expansion of material rhetorics into space analysis; it also has implications PTW/Rhetoric teaching related to materially distribution of agency in the classroom space. Finally, it can help innovation practitioners such as interior designers, engineers, and industrial designers to rhetorically communicate their values of innovation and establish a culture of innovation in their companies through material-linguistic means.

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To
my wife,
my parents,
and my teachers

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Chapter 1: Opportunities for a Material Rhetoric Analysis of Innovation

Chicago's InnoNation lab is a 1500-square-foot space in a gentrified warehouse in the West Loop. Inside, the walls are bright purple, the branding color of Solution People, a third-party innovation firm that runs the space and uses it to host innovation workshops and product development sessions for outside organizations. InnoNation caters to community organizations, startups, small companies, and corporations seeking collaboration strategies for innovation. The space has chestnut brown hardwood flooring, polished to a shine because participants are encouraged to remove their shoes and wear tube socks, which the InnoNation provides, when using the space. On the day of innovation workshops and new product development sessions, four different styles of chairs line the perimeter of the main teaching area. They include computer desk chairs, easy chairs and couches. In the center of the training area is a chair shaped like two giant feet modeled after Michael Jordan's feet, a spiral novelty chair that mimics InnoNation's spiral staircase, two yellow hand-shaped chairs, and one massive foam question mark chair. The InnoNation also boasts a collection of miniature "The Thinker" statues and an oversized abacus where bowling balls serve as beads. Originally commissioned for the Enron headquarters building, Hamman bought the abacus at auction after Enron declared bankruptcy. After displaying it in the InnoNation for months an accountant participating in an innovation session realized the abacus was one "bead" short. Hamman starts all of his sessions by sharing the story and speculating that that is why Enron suffered from accounting errors to break the ice.

Storytelling to welcome participants into the space is elemental to the Outlaw Innovation Lab as well, which is another innovation site targeting community organizations, startups, and small businesses. Pete Becker founded it in 2012 in hopes of rejuvenating the Milwaukee area's reputation for innovation that he claims has been dormant since the early 1900's. Housed in a revitalized warehouse in a Milwaukee exurb, Outlaw has two large echoing meeting spaces with

hardwood floors and breakout rooms on the periphery of the main space; each room is themed after the Wild West. The “OK Corral” is a room for “shooting ideas around” and deciding whether they are “OK.” In the center of the main space are two partially walled areas Becker calls “corrals.” The walls are constructed with thick cubed glass and braced by reclaimed railroad beams paying homage to Milwaukee’s history as a manufacturing and industry hub at the turn of the century. On the opposite end of the entrance is the “Up Stream” room inspired by the unattributed cowboy quote “Never Drink Downstream from Your Horse.” It is richly appointed with antique overstuffed sofas, a fireplace, and an oak cabinet stocked with expensive wine. Pepered throughout the Outlaw Lab on its redbrick walls, are airbrushed silhouettes of Outlaws breaking Broncos, embodying Becker’s theory of innovation that true creativity requires mavericks unafraid to buck the system.

Though InnoNation and Outlaw Lab cater to their communities, the corporate world, too, is optimizing space for innovation given increasing demand for a corporate “culture of innovation” (see Edinger; Hoque; Florida; Kester) In the Milwaukee area, a global healthcare company which has named its site after Edison’s Menlo Park lab facilitates innovation sessions for the company’s design, sales, and marketing employees. Diffused lavender scents the room, and participants in the ideation sessions often arrange and rearrange bright orange couches on sliding disks. Participants have full access to a phonograph with an eclectic collection of vinyl records. Fold-out tabletops line the walls. When the tables are in the upright position against the wall, participants can see replicas of Edison’s patent applications for some of his most famous innovation. When the tabletops are folded down, they become dry-erase board tables, revealing photographs of Edison’s actual creations, which were previously covered by the replica patent applications.

Dirk Tech, another corporation headquartered in Milwaukee has just completed work on its own innovation space, the Venture Wald. Catering to Dirk Tech's computer programmers as well as to startups that Dirk Tech has chosen to incubate, Venture Wald is organized into rooms named for fictional inventors. Innovators interface with a Rube Goldberg machine in the Doc Brown room and a wax figure of a hand holding a top hat in the Wonka Room. A reclaimed score board from the former Milwaukee Brewers stadium tracks the score for monthly shuffleboard tournaments. Near the board is a full bar with Milwaukee-brewed microbrews on tap, but it is buffered by a device that checks ID's before dispensing beer.

Statement of Purpose

The InnoNation, the Outlaw Lab, Menlo Center, and the Venture Wald are just a few unique sites that represent a trend in innovation: the proliferation of designed environments that supposedly cultivate creativity and collaboration. The prevalence, proliferation, and novelty of such spaces provide fascinating rhetorical sites for storytelling, branding, and collaboration and they warrant more exploration, especially from a material rhetoric perspective focusing on ambience. Cultural values of innovation and rhetorical potential are embodied in the “ambience,” the surrounding material environments, (Rickert 106) of these locales, a blending of textual nonhumans, decorations, furniture, and innovation professionals which creates an “immersive environment” for social action (Rickert 104). Illuminating both the material and linguistic rhetoric of these spaces affords rich insights into how innovation facilitators employ nonhumans to express their values of creativity. It also reveals how innovation professionals engage with space while generating ideas, and helps us reconsider agency as distributed materially throughout physical locations during the process of innovation, expanding traditional notions of linguistic rhetoric into material rhetoric.

Historically, similar inquiries about the role of ambience in creativity have emerged in architecture, interior design, and business research. However, PTW/rhetoric scholars committed to the rhetoric of innovation are uniquely suited to analyze these sites rhetorically to determine how the ambience of these sites shape creativity. This is an especially kairotic moment for professional writing scholars to study this phenomenon given emerging rhetorical theories such as ANT and ambient rhetoric, which move beyond the symbolic and linguistic and into a rhetoric of material semiotics (Latour, Bryant, Harman, Rickert). It also comes at a time when corporations and community innovation spaces are proliferating at an unprecedented rate based on the notion that space somehow manipulates creativity.

In this research, I operationalize the latest theories of the materiality of rhetoric to articulate how these spaces influence innovation or determine whether these are influencers at all. I use three research questions, which are rooted in the following material semiotic assertions: humans enroll nonhumans in networks to help realize programs of action, nonhumans furtively enact agency upon humans, and agency is symmetrically distributed across human-nonhuman networks. (Latour “Where Are” 166; Latour “Technology is” 107; Akrich, Callon, and Latour part 1 261). Though these questions represent industries in rhetoric research at this time, I have designed them based on my own interests in the rhetoric of space. They are as follows:

1. *Humans Enrolling Nonhumans*. What programs of action do innovation site facilitators, designers, and directors pursue, and how do they enroll material nonhumans (tools, objects, technologies, Ambiences) to embody their values of innovation and enact those values upon participants within innovation sites (Latour “Where are” 166)?
2. *Nonhumans Enacting Agency on Humans*. Ontologically, while innovation site facilitators attempt to enforce their programs of actions, are material nonhumans in the

space also enforcing antiprograms that are limiting, unethical, or detrimental to innovation without participants noticing? If so, in what ways might participants be oppressed by the withdrawn agency of nonhumans or the ideologies they embody within innovation sites? (Harman “An Outline” 194; Bryant 26; Rickert 168; Bogost “Object-Oriented Rhetoric”)

3. *Nonhumans Networking with Humans*. Given the principle of general symmetry, what might conceptualizing innovation sites as actant-networks reveal about how humans engage with symmetrically agentive nonhumans during the ideation process? How do material actors interact with other material actors to produce ideas? (76; Latour “Technology is” 105; Callon and Latour 343).

Relevance to PTW/Rhetoric

Because the inquiry about creativity is common to psychology, architecture, interior design, and business administration, PTW and rhetoric and its commitments may seem at odds with this project. However, as Kenneth Burke asserts “Wherever there is persuasion there is rhetoric, and wherever there is meaning there is persuasion” (171-172). The sites I’m choosing to analyze are saturated with meaning, and all three of my research questions inquire about the ability of these spaces and the nonhumans within them to persuade actions, thoughts, and values. The activities that occur within these innovation spaces are entrenched in rhetorical communication and have extensive implications for PTW/rhetoric researchers, scholars, and practitioners. Furthermore, scholars of rhetoric acknowledge that rhetorical situations have spatial dimensions and that locations can be analyzed as texts (Ackerman 84). They also assert that material nonhumans in addition to linguistic symbols are rhetorical, (Selzer 6; Blair 22) and

that innovation is a rhetorical process (Doheny-Farina 30; Akrich, Callon, and Latour part 1 188).

These assertions are foundational to my research, but I will expand upon them by responding to the prompts of Latour, Bryant, and Rickert to take a material semiotic approach to rhetoric. It is an approach that de-centralizes the human by accounting for the symmetrical agency of the thing and the human to make changes in the world (Latour *Reassembling* 70). Rickert's notion of "ambient rhetoric," asserting that rhetoric is prevalent in all of "that which surrounds" is most suited for a material analysis of a location. However, neither Rickert nor any other rhetoric scholar thus far has applied ambient rhetoric to a full analysis of a location the way I will be analyzing innovation sites. The following section elaborates on the justifications above for treating my research as a rhetorical project. It then details the implications my research will have in PTW/rhetoric scholarship.

Rhetorical Situations have spatial dimensions

Rhetoric is an ideal discipline by which to analyze spaces designed to cultivate innovation because, "rhetorical situations have spatial dimensions," (Ackerman 85; Lefebvre 7). Cultural values and dominate practices are implicated in the places where we live and work, and these practices come to the forefront when we analyze the interaction between signs, objects, and interpretants in these spaces (Ackerman 85). Analysis of these spaces, which rhetoricians are uniquely suited to conduct, reveals the practices not only of those who work or participate within the space, but of those who have originated the spaces as well, which will help me answer my first research question. In a way, designers who create space or facilitators who leverage it do the same work as writers who create texts, and those who analyze spaces engage in the same rhetorical work as those who analyze texts. Ackerman illustrates this analyzability of space using the example of a kitchen. Based on the affordances of the kitchen's original design, they once

represented the cultural values of “domesticity, security, and continuity for modern families” (Ackerman 94). These spatial details also symbolized a woman’s place in a patriarchal society as a homemaker (Ackerman 94). However, based on the evolution of these cultural viewpoints, kitchens have expanded as public spaces as exemplified in floor plans. This modernization also overcomes distinct gender biases and separation and initiated the kitchen as a social gathering place (Ackerman 94). Tracing this evolution of the kitchen and how people have been shaped by the kitchen reveals more than just the affordances of a physical space; it also reveals cultural and rhetorical values that spaces were used to impose upon people linguistically and materially. Similarly, rhetorical analysis of innovation sites elucidates values, perspectives, viewpoints, and assumptions about workplace innovation that may be embodied in surrounding texts both material and linguistic. It also elucidates power and domination tensions that exist between management and innovation knowledge workers. Rhetoricians have been interested in domination, expertise, power, and class for years, and this analysis reveals how all of these phenomena are produced and represented by space. Thus, my project responds to Ackerman’s suggestion to “extend our fluency in rhetorical situations and agency in order to address the historical and material attributes of social space” (85).

Nonhumans Are Rhetorical

Ackerman asserts that physical space itself is rhetorical because it embodies and expresses cultural values that emerge from the interrelation of the people, nonhumans, and context within places (Bitzer 7; Ackerman 84), which for my case are innovation spaces. Space provides the physical, concrete, material setting for the interaction. Additionally useful for the justification of this project as rhetorical is the scholarship that parses out one particular element of the interrelations I addressed above: material nonhumans. Carol Blair suggests that rhetoricians attuned to the significance of an artifact’s material existence can best determine

what an artifact does and/or the consequences it brings forth (16-17), which moves the analysis beyond simply representation and symbolism. Symbols, she says, always point to meanings outside of themselves, but this symbolicity is often too focused on the process of production and not enough on the result of the symbol or artifact. Biesacker and Lucaites refer to this as an “anemic sense of rhetorical effect (2; Blair 20). Also, symbols are partial for understanding partisanship, power, and political implications (Blair 20) because of an emphasis on representation over mediation of human thought and behavior (Biesacker and Lucaites 4; McGee 18). This overtaking of the representational or linguistic for the ontological forces of things in-and-of-themselves is an important justification for a rhetorical analysis not just of the innovation sites but of the nonhumans that constitute them.

The acknowledgement that space is rhetorical and constitutive of values is foundational for my project’s purpose as is the assertion that material nonhumans constitute values rhetorically the way language and symbols do. However much of the rhetoric research is focused either on the linguistic/symbolic elements of rhetoric or the material elements of rhetoric in isolation. Thomas Rickert’s ambient rhetoric theory is ideal for joining these two approaches together. It asserts that rhetoric is symmetrically linguistic and material:

Rhetoric can no longer remain centered on its theoretical commonplaces of rhetor/subject, audience, language, image, technique, situation, and the appeals accomplishing persuasive work, at least as they are predominately understood and deployed. Rather, it must diffuse outward to include the material environment, things, our own embodiment, and a complex understanding of ecological relationality as participating in rhetorical practices and their theorization. (Rickert 9)

Thus, ambient rhetoric is pluralistic and ecological, accounting for all of “that which surrounds” in a rhetorical situation (Rickert 4; Bitzer 1) whether human or nonhuman.

Innovation is a Rhetorical Process

To summarize so far, analysis of an innovation site is rooted in PTW and rhetoric because places are designed, read, and interpreted; and emplaced innovation both generates and integrates texts. Additionally, my project also has implications for PTW because it assumes innovation to be a rhetorical process, which is infrequent in contemporary inquiry in PTW with the exception of Doheny-Farina’s research on technology transfer. He called the innovation process a “locus of sophisticated rhetorical activity” (30). I agree with and expand upon his notion below that corporate innovation is rhetorical because it requires culture-making and involves complex communication.

Innovation is a cherished attribute of corporations of all sizes in an economy characterized by “rapid change and a ceaseless quest for the faster, better way to operate” (Brown). A 2009 study in the *Journal of Marketing* researched over 750 organizations in 17 countries to discern factors that predicted innovation. The most important driver for innovation, the study found, is the establishment of an internal corporate culture of innovation (as qtd. in Brown). Given that corporations are engaged in culture-making, PTW and rhetoric scholars would acknowledge that the establishment, creation, and maintenance of a culture at all is deeply rhetorical. Rhetorical research since Perelmanian philosophy in the 1940s has been committed to values, hierarchies and the loci of the preferable. Culture-making is value-laden; therefore, it is connected with how “values relate to or establish access to the truth about reality” (Gross 69).

The process of ideating a technology, establishing it as a product, and diffusing it to end users is “murky and frustrating” because of its collective nature (Akrich, Latour, and Callon Part 1 189; Doheny-Farina 4). The transfer from concept to the “first positive sanction of the user”

(Akrich, Callon, and Latour part 1 189) implicates groups and subgroups of marketers, designers, production specialists, lab, techs, planners, and public administrators (Doheny-Farina 4; Akrich, Callon, and Latour part 1 189). These actors contribute languages, values, and assumptions to the innovation process. If that is not complicated enough, all of these commitments are fluid. In fact, Akrich, Callon, and Latour illustrate the innovation process as a rocket aimed towards “a planet whose long-term trajectory is unknown, taking off from a moving platform whose coordinates are only crudely calculated” (Part 1 189). Thus, this complicated process is “a phenomena of communication” (Doheny-Farina 6), and it occurs in a context rich in information, definition, identity, and social roles, which involves the mobilization of every available means of persuasion (Aristotle; Harrison and Laberge 499). This why Doheny-Farina argues that technical and professional writers, communication experts, should be active in every phase of the process. Gemmell, Boland, and Kolb say “The greatest ideational productivity occurs when ‘trusted partners’ exchange and refine ideas through shared cognition (abstract). This “shared cognition” is apropos to Burke’s notion of rhetoric as “adherence of mind;” (Perelman and Olbrechts-Tyteca 3). Therefore, technology transfer is grounds for rhetoricians to study for PTW scholarship. My research acknowledges the rhetorical qualities of technology transfer and expands on a phase of the process that Doheny-Farina only briefly addresses: “the investigation phase” (Doheny Farina 171) or what I consider the ideation phase of the innovation process and its rhetorically rich locales.

Expansion of Rhetoric into Ambience

In academic research, we are in the midst of communications revolution, a movement from analog, hardcopy text to ubiquitous communication environs. In addition to humans communicating to humans, humans now communicate to machines and machines to humans through mediating artifacts. There is an exigency for the expansion of rhetoric’s scope to account

for an “ambient age” when “new and digital technologies are increasingly enmeshed our everyday environment” (Rickert 1). Many of these new technologies are “smart (and) capable of action” (Rickert 1), but even things not “digitized and externalized to communicate” (Rickert 4) need to be conceptualized as agentive (Latour; Callon; Law; Harman; Bryant) in technology studies and PTW as rampant consumerism has ushered-in an unprecedented age of human expression via stuff (Lanham; as qtd. in Rickert 1). These ambient things, both technological and rustic “permeate the carpentry of the world” and call for a rhetoric not only of epistemology, but also of ontology, being (Rickert 5, 224).

The research marks a Copernican ontological shift from the human-centric to the nonhuman-centric, overcoming the bifurcation between subject and object, nature and culture, and thing and person (Latour *We Have Never* 11; Latour “Why has Critique” 239-242; Rickert 59). In response to these trends and this increase in research of the material rhetoric, my research questions are crafted not only to probe the linguistic actants in innovation sites, but also to probe the material actants and the ambience of the spaces themselves, what Rickert calls, “the arrangement of accessories to support the primary effect of work” (6). In other words, nonhumans affect all facets of life, and relevant rhetoricians who study “style as a technology for directing human attention” (Lanham; Hirshliefer 100) must expand and complicate their viewpoints to accommodate this reality.

The spatial analysis of the material carpentry of innovation sites, then, responds to material semiotic researchers’ calls for an ambient rhetoric. My work updates rhetorical theory and can help PTW scholars expand their notion of rhetoric to account for the economics of attention in an era proliferated by nonhumans. It also elucidates how humans leverage nonhumans to enforce a program of action, how humans join forces with symmetrically agentive

nonhumans to generate ideas, and how nonhumans sometimes enact antiprograms below the surface of human awareness within innovation sites. I deem Rickert's ambient rhetoric a powerful lens by which to view the rhetorcity of the material elements of innovation sites, and I will frequently refer to his viewpoints and methods in my research. He has laid a solid foundation for rhetoricians to analyze a multitude of material ambiences, but he has not yet engaged in a project himself exclusively dedicated to a particular ambient setting. Because of the newness of his viewpoint, in fact, few PTW or rhetoric scholars have employed his ambient rhetoric in spatial analysis. This project will do just that, and it will simultaneously translate ambient rhetoric from a material semiotic framework for rethinking rhetoric into a methodology for gleaning insights about community and corporate innovation spaces.

Since many of the terms I'll be using to answer these research questions have multiple meanings and uses, my next section will address the definitions of the common terms that I will employ. These terms include creativity, novelty, innovation, ideation, idea constellation, and Innovation site. Occasionally I alter anthropocentric definitions to account for material semiotics, and I explain why I do this in light of my frameworks and research questions as well.

Innovation Trends and Assumptions

In an era of unprecedented proliferation of virtual workspaces, leading companies are investing more resources than ever in studying, shaping, and controlling physical workspaces. *Forbes* reports that Apple has invested an estimated 5 billion dollars in a donut-shaped headquarters crisscrossed with walking and biking trails. Apple's been calling it "the spaceship" (Carlyle). Google's eyeing a mountainside location for a scintillating glass structure that will undulate with the foothills and absorb natural light like a greenhouse (Carlyle). Facebook has contracted renowned architect Frank Gehry for an expansion that will include a 9-acre rooftop

park. The company will even be constructing 12 low-cost homes as part of its training program for new employees (Carlyle). Tech giants, however, aren't the only companies fixated on space these days. According to the Brookings Institution, the new model for entrepreneurship are "innovation districts" emerging throughout the United States (Katz and Wagner). Innovation Districts fuse economic assets such as research and medical institutions, private organizations, and neighborhood-building amenities to attract young innovators with unprecedented access to technology resources (Katz and Wagner).

There are multiple cultural, economic, and financial trends contributing to this investment in both community and corporate innovation sites such as the following:

- *Growing Skepticism of Corporate Creativity.* Since 2008, many people have come to believe that the perceived bureaucracy, hierarchy, and greed has squashed creative potential. Innovative employees in record numbers are fleeing corporations to establish startup companies that seem more open to change and risk-taking. In response, many corporations that deal with innovating products have begun borrowing spatial designs and policies from startups to boost the creativity of their staff. The result has been an influx of innovation sites in corporations, spaces that are rooted in corporations but at least appear to run with flattened hierarchies, design thinking, and an entrepreneurial spirit.
- *Democratization of innovation.* Because of the open-innovation movement, companies are turning inward for ideas, opening to all employees rather than those hired specifically for innovation. As a result, companies have recognized the importance of giving all employees access to space meant to foster creativity whereas these spaces were previously reserved for administrative employees or those in "creative services." (Chesbrough 37).

- *Creative Culture of Millennials*. With the proliferation of a collaborative, tech-savvy workforce, traditional companies now strive to foster a collaborative, creative culture and create an environment in which those with newly minted bachelor's and master's degrees can thrive.
- *Need for culture-making in the workplace*. David Burkus debunks 10 myths of creativity in his new book. Among them are the "Eureka myth" wherein creative ideas occur suddenly and without explanation (Burkus 21) and the "lone creator" myth which ascribes to the belief that a solitary genius thinking alone can innovate (Burkus 35). In actuality, innovation researches insist that creativity emerges from a consistent, predictable, and planned culture that can be cultivated and replicated and that stakeholders perceive as stable. Designing a workspace that cultivates an innovation culture is an essential aspect of culture-making.
- *Intrepreneurship*. Corporations are brokering technology transfer models from startup culture dedicated to design thinking, flattened hierarchy, cross-disciplinary diversity, openness, tolerance for "intelligent failure" (Sitkin as qtd. in Gunther-McGrath 78) and entrepreneurial models of idea pitching. Both the Menlo Center and the Electech innovation space, for example, run as internal startups in which innovators conceive of products and then "pitch" them to upper management for investment. This "intrepreneurship" (Clark) is revolutionizing the generation, sale, and sharing of ideas within companies and the role of space in those processes. General Electric (GE), for example, has approved 500 pitches for funding in the last 15 months (Alsever). According to *Fortune* GE and Electech join the ranks of Coca-Cola, MetLife, IBM, and Cisco in replicating venture capital models. These companies seek to lighten the

bureaucratic heft of corporations, activating potential entrepreneurs from within the company (Alsever). This brokering from startup culture implicates open collaborative spaces.

- *Demand for collaboration.* With knowledge work becoming increasingly specialized, collaboration is more important than ever, and a multitude of companies from startups to powerful tech companies are constructing sites with this in mind. According to *Harvard Business Review*, spaces are now viewed as strategic growth tools that encourage collaboration between multiple cultures (Waber, Magnolfi, and Lindsay “Evolution of the 4 P’s”).
- *Renewed importance of employee morale.* Within the last few years, the working economy has dramatically shifted. No longer do employees seek dream jobs. Rather, companies, because of a saturated job market now court dream employees. When they hire desirable employees, they expend more effort to retain them. This means their thinking more about how the workplace environment makes them feel valued and empowered
- *Conceptualization of Workspace as strategic tool.* For the first time, companies are conceptualizing workspaces not just as a backdrops but as active participants in work (Rickert 23). *The Harvard Business Review* reports that data are shifting from efficiency metrics, measured by cost per square foot, to “collidability” the ability of a physical environment to funnel heterogeneous disciplines and cultures into singular locations, spurring collaboration (Wabor et al. 13). Zappos, for example, now uses “collisionable hours,” a metric that calculates interactions per hour per acre of workspace (Wabor, et al.

14). As these metrics emerge and evolve, physical space will become increasingly commodified across all industries.

- *Newfound value of community's perceptions of companies.* Madison's Epic Systems Corporation, which designs medical software, opens its Verona campus to visitors.. Busses of local nursing home residents or school kids park in front of Epic's "intergalactic visitor's center" and release tourists excited about the Farm Campus and apple orchard, the Deep Space auditorium six stories underground, the conference room tree house, or any of the other buildings inspired by literature classics, Disney films, and Nintendo games (Glaze). Innovation spaces like Epic persuade outsiders that the company in the space is innovative, which enhances interest and investment

These trends have led to the proliferation of innovation sites like those I've researched, and well my research does seek to locate these spaces within corporate and community trends, my main focus is on the cultural assumptions of innovation and how innovation site facilitators enact these assumptions through the enrollment of nonhumans in the space. Across all of my research sites, the assumptions of fostering innovation that were embodied in the physical space were as follows:

- *A consistent culture of innovation.* Innovation facilitators conceded that employees who need to innovate need must be ushered into and frequently reminded of a culture of innovation. Space serves as that material reminder of culture, assuring innovators are situated within the spaces values both culturally and physically.
- *A departure from every day workspace.* The innovation site facilitators and professional innovators I researched asserted that every day spaces stymied ideation; differentiated thinking, they assume, requires differentiated spaces. Indeed, this assumption is the

source of proliferation of innovation sites in all sectors and the foundation of the marketing of these spaces. They serve as locations for what could be called innovation retreats that the facilitators seem to think will enhance creativity.

- *Openness to change*. Perhaps related to the assumption that new spaces create new ideas, the managers and the directors of the spaces expressed a need for all innovators in the organization to be open to change. They believe that the status quo results in status quo products and that new attempts and risks could help come up with new product. That belief in openness to change is important in the way many of the innovation sites are designed.

These were the most common values of innovation spaces for enhancing creativity across the research. Based on research question 1, I focused on how innovation site facilitators used the ambiances of these sites to support these assumptions; however, based on research questions 2 and 3, I also described how the material nonhumans themselves exercise agency that defies these assumptions. I will now outline the contributions of my approach to PTW/rhetoric scholarship, PTW/rhetoric pedagogy, and innovation practice below, expanding on them more in chapter 4.

Contributions

PTW/rhetoric Scholarship

I address many cultural assumptions of innovation employed in these sites, and that is an important contribution to the material rhetoric of innovation. This work will also contribute to PTW/rhetoric research by:

- Developing a heuristic for analyzing programs of action, antiprograms, and general symmetry in material space. The structure of my three research questions establishes precedence for future space analysis projects from a material semiotic perspective and expresses the major purpose of analyzing space based on human intention, nonhuman

agency, and the general symmetry that occurs between humans and nonhumans in network constructs.

- Applying new rhetorics in PTW scholarship rooted in materiality. Forward-thinking PTW scholars are proposing a rhetoric of material nonhumans in response to cultural shifts spurred by technology, the ubiquity of global and economic structures, and the daily interaction with materials (Coole 12; Rickert 3; Latour, *Pandora's*, 176). This project will blaze trails for future material-centric analyses of PTW/rhetoric research, PTW/rhetoric pedagogy, and innovation practice.
- Initiating a material semiotic analysis of workspaces. Direct application of Rickert and Latour's notions to physical sites is rare in the research, especially when in conceptualizing workspaces as materially rhetoric places.
- Identifying Dangers Posed by the Agency of "Runaway Objects," Enacting Antiprograms. Rhetoric over the last 30 years has identified oppression by powerful organization and individuals; it has critiqued the agency and responsibility of cultural groups; however, rarely has rhetoric exposed nonhumans as extensions of oppressive viewpoints. My research will identify and help rhetoric scholars retain control over material-embodied ideologies furtively oppressing humans.

PTW/Rhetoric Pedagogy

PTW rooted in rhetoric is proliferating at an unprecedented rate in response to demands in higher education for more pragmatic approaches to writing. Therefore, this research is a kairotic professional writing project that will contribute to the field by:

- Emphasizing the materiality of rhetorical context in addition to the culture and social elements of context. This project illustrates of how tools, furniture, material icons,

surroundings, senses can shape both the writing process of students and the reading processes of their audiences. Focusing students on these contextual elements will empower them for persuasive work by exposing them to material nonhumans as additional devices for rhetoric.

- Prompting reflection on how the material nonhumans of communities, campuses, and classrooms and their agency may undermine instructors' intentions by furtively enacting oppressive ideologies through material means. My focus on antiprograms defying programs (Latour "Technology is" 107; Latour "The Berlin Key" 12) will help instructors identify potential clashes and paradoxes present in their planning of courses and use of the physical classroom space.
- Identifying alternative processes for individual and collaborative invention in writing courses that encourage students to leverage nonhumans to generate essay and research project topics. It may also help them arrange their material writing contexts to be more conducive to improvisation and ideation.
- Enrich place analysis assignments in composition. My project will serve as an exemplar for a comprehensive place analysis that complicates traditional place analysis work with an emphasis on the materiality of rhetoric.

Innovation Practice

Along with contributions to PTW/rhetoric pedagogy, this project will also contribute to our academic understanding of innovation practice and the power of the place of the innovation itself. I hope to contribute to this field through:

- Illustrating How Innovation Site Facilitators Leverage Actants to Enforce Programs of Action. This expands PTW/rhetoric research, opening researchers to the rhetoricity of

things along with the rhetoricity of symbols and signs. Enacting innovation programs of action requires symbolic and material communication. This will call upon rhetorical skills that we've been teaching in PTW and rhetoric for years such as the crafting of persuasive presentations and online reports, as well as new and interesting rhetorical situations that involve report-outs to corporate management from within the company as if the communication is actually happening externally. There are also many implications in the study of power and control and how corporations ought to respond to tension between bureaucratic power and innovation ideologies that promote a flattened hierarchy.

- Describing How Actant-Networks of Human and Nonhumans Co-create During Ideation.

In an era of proliferation of material nonhumans, this project analyzes the discourse that occurs not only between humans, but also between humans and things as networks.

According to Murdoch, networks unite materials that have their own space-times, into new configurations that reflect the types of relations that established the network (357).

Once all actants are relationally linked, the network itself becomes an actant with a centered-subjectivity, and the pursuit of its goal becomes durable (Latour *Reassembling* 23). Thus, conceptualizing ideation as a component of a network of heterogeneous actants makes creativity durable. Additionally, it illuminates how creativity can be better predicted, controlled, and generated. Once all actants in the process align, the network grows "heavy with norms" (Callon; as qtd in Murdoch 362) and then can be recreated, measured, and managed (Murdoch 362).

- Identifying hybrid innovation techniques that fuse business research with rhetoric research. The power to innovate is one of the most important assets for businesses large and small. Business and innovation research has posed multiple techniques for

innovation, but this project should expand those techniques by proposing approaches that combine both rhetorical studies with business and innovation studies.

The addressed contributions are cross-disciplinary but they are mostly rooted in PTW and rhetoric. Exploring each contribution will require conceptual clarity in the definitions and concepts I'll be discussing, so I will now address the terms that will appear throughout the analysis and discussion of the research.

Definition of Terms

Creativity

Because my project is focused on workplace innovation, I utilize Amabile's product-oriented definition of creativity as "the production of novel and useful ideas by an individual or small group of individuals working together" (Amabile "A Model of" 126). However, since my framework is new materialism and my research questions assume the agency of nonhumans, I expand this definition to *the production of novel and useful ideas by a human or nonhuman actant or group of human or nonhuman actants working together*.

Innovation

Doheny-Farina defines innovation as the development and commercialization of new technologies to make them into products (3). The emphasis seems to be on implementation, a technology that can be used. Teresa Amabile agrees on the purposefulness aspect of the concept saying that innovation is "the successful implementation of creative ideas within an organization" ("A Model of" 126). Amabile's distinction between creativity and innovation is in the word "implementation." It implies that a tangible product, process, or service results from the idea (Amabile "A Model of" 126). Though my research is interested in the entire process of innovation of tangible products in manufacturing, computer software, and education, my focus is on the initial generation of concepts in ideation sessions, so I will be using the term "creativity"

and “ideation” more than innovation even though I consider these to be part and parcel of innovation.

Ideation

Ideation is a process intended to generate an abundance of potential solutions and ideas. It is synchronically and diachronically collaborative and strives for what I deem “Idea Constellations.” The Stanford d. School, which originated the Design Thinking methodology prevalent in entrepreneurial innovation, describes the ideation as a transition from identifying problems to creating solutions by combining an understanding of the problem and the people one is innovating for with imagination for possible solution concepts (Institute of Design at Stanford 2).

Idea Constellation

Teresa Amabile cites evidence of a positive relationship between quantity and quality of ideas (Milgram, Milgram, Rosenbloom & Rabkin; as qtd. in Amabile *Creativity in Context* 96). All the innovation sites I researched agree with this as they all employ methodologies such as design thinking intended to generate an abundance of novel ideas. I call this collection of ideas that the spaces seek to generate “solution constellation” because within the actor-network theory (ANT) framework each idea is connected to the other as symmetrically agentic. Generating an idea constellation is one of many programs of action attributed to innovation sites that I identified in the research.

Innovation Sites

When I refer to these material locations throughout the research, I’m addressing material locations crafted by professional designers, corporate management, or corporate administration intended to cultivate collaboration and creativity that will lead to innovative ideas. It is important to distinguish my use of space as a physical, material location from much of the rhetoric

scholarship that refers to “space” and “place” as abstract concepts of the mind, rooted in the commonplaces of classical Greek rhetoric. The research covers corporate innovation sites, spaces designed by management to cultivate innovation for employees of the corporation as well as community. It also covers community innovation sites, which employ many of the same design techniques but can be rented out by small companies or organization for ideation.

Innovation Site Facilitator

I will refer to both people who have designed innovation sites and people who facilitate innovation sessions (brainstorming, innovation workshops, etc) as “innovation site facilitators” throughout the project. To save time, I make no distinction between those who created the innovation spaces and those who leverage the spaces to help innovate mainly because I’m interested in the programs of action of both. Additionally, many of those who designed their spaces are also the facilitators of sessions in that space.

These terms will be used in multiple places throughout the dissertation and across all of the chapters. To prepare you for what these chapters will address related to these terms, I will now briefly preview what each chapter of the project will contain.

Dissertation Overview

Chapter 2: Literature Review

This chapter situates my research questions within the existing literature in psychology, business, and rhetoric. It identifies gaps in the cross-disciplinary research on space and creativity such as an overemphasis on perception and social constructivism. Affect theory is summarized as well, which is much more effective in ascertaining a full picture of creativity and space but fails to account for the agency of nonhumans. The chapter next surveys the work in PTW and rhetoric on similar topics such as space and creativity and ends with a brief preview of the components of material semiotic studies, which I expand on in chapter three.

Chapter 3: Methodology and Research Design

My controlling methodology for this research is the material semiotic commitments of Latour's actor-network theory (*Reassembling* 13) and Rickert's ambient rhetoric theory (5); Amabile's componential theory of creativity informs the work as well (90). The chapter explains the tenants of each theory and its role in my analysis. It then provides a rationale for my research method and describes the five corporate and five community innovation sites that participated in the research. My three modes of data collection, observations, ambience descriptions, and interviews is also addressed as is the technique I employed for coding the data.

Chapter 4: Data Analysis

This chapter explains the findings I gleaned from observations, ambience descriptions, and interviews in innovation sites I chose. Its structure complements my research questions first acknowledging the programs of action innovation facilitators promote using nonhumans (Latour "Technology Is" 107) then detailing the antiprograms of agentive objects that undermine the programs ("Technology is" 110; "The Berlin Key" 12). I then pose general symmetry between humans and nonhumans as a corrective to the tensions of program and antiprogram clashes, using the principle to describe nonhumans collaborating with humans during real-time ideation. (Latour "Where are The Missing" 226; Callon and Latour 343).

Chapter 5: Implications

This chapter describes how my findings inform PTW/rhetoric research by reconceptualizing rhetoric as ambient and material. It then elaborates on how these research informs classroom management, assignment creation, and community building in PTW/rhetoric pedagogy. It ends with implications for practitioners of innovation whether they be professional designers, engineers, or professional writers.

Chapter 2: Literature Review

This literature review will first address the most prevalent cross-disciplinary research in creativity and the physical environment, which is about how humans perceive physical environments as conducive to creative thinking. It summarizes multiple psychology studies that analyze the human perception of creative workspaces. Though common in the literature, perception-centric analysis is limited because it doesn't account for the role of nonhumans in enplaced innovation nor does it identify how innovation site facilitators leverage nonhumans to enact their values of innovation, and I will propose a new materialist analysis as a corrective to this partiality.

Next, I will summarize the limited research in psychology, interior design, and business management on the role of affect in creativity or how designed spaces can evoke emotions potentially conducive to creative thought. Though affect moves us closer to a new materialist understanding of the physical workspace by acknowledging that nonhumans can shape humans without human awareness, it still doesn't consider nonhumans as agentic. I will discuss why my research must consider all nonhumans, technological or nontechnological, agentic for a more accurate understanding of how physical environment shapes thinking and how the best methodological approach to understand agency is through posing ontological questions about work settings rather than epistemological ones.

I then broadly survey the literature in PTW/rhetoric studies that has addressed space and its effects including space as text, space as socially produced, the importance of cultural and geographic milieu in space, the kairotic elements of space, and space as an embodiment of cultural and social values. I will argue that the most of the current PTW/rhetoric research has propagated the bifurcation between humans and nonhumans by overemphasizing the human side

of the divide to the detriment of studies of nonhumans. Refocusing on the materiality of rhetoric and material semiotics, I believe, is the ideal solution to this bifurcation, so I will then discuss the latest research in these two areas. Thomas Rickert's ambient rhetoric theory is effective for correcting the flaws of the cross-disciplinary research on creativity and space, but I will also incorporate Latour's actor-network theory and Bryant's notion of "flattened ontology" (246) to expand the study of rhetoric beyond the linguistic, representational, and symbolic and into the material and ambient, or "that which surrounds" (Rickert 9).

Perception of Creative Space

Current research on the role of the environment in fostering creativity has emerged mainly from environmental psychology, architecture, interior design, and business administration. However, many of these studies, regardless of discipline, focus on how physical environments can be *perceived as conducive* to creative thinking (Bryant 108; McCoy and Evans 408; Vithayathawornwong, Danko, Tolbert 1; Landry ix), which is partial because of an overemphasis on the visual, anthropocentric, and socially constructed characteristics of space.

In psychology research, there is a striking number of creativity and place studies that focus only on the visual, providing a partial understanding of the complexity of space and its rhetoricity; the studies usually ask participants to speculate about photographs of potential creative spaces and therefore fail to immerse them in the ambience of each site. In a 2002 study, McCoy and Evans presented participants with photos of workspaces and asked participants to rank each space's potential for creativity. The researchers concluded that places that subjects perceived as creative were complex in visual detail, contained views of the natural environment and use of natural materials (Kaplan and Kaplan; McCoy and Evans 409), used fewer cool colors, and employed less manufactured or composite surface materials (McCoy and Evans 409). In her dissertation, Molly Bryant, an interior design specialist, took a similar approach to the

perception of creative space. Her study provided participants with images of diverse workspaces and then asked them to match descriptive words to the spaces from a list of 86 pre-established words. In the next phase they did the opposite, matching another set of images to another set of words with the same goal in mind: identifying which spaces were perceived as creative and which ones seemed stifling or oppressive (M. Bryant 73). Celyan, and Dule, as part of a dissertation, conducted a study that also focused on photographs and images though their focus was on how managers of manufacturing companies perceive workspaces rather than how employees themselves conceive of workspaces. Each manager viewed 25 photographs of office environments and then were asked to identify which environment they would go to to solve special problems or generate an abundance of ideas. Each participant then ranked the photographs on the spaces from 1-11 based on which placed seemed to be the most creative. Again, the study provided participants only with a partial representation of these sites that didn't account for sensory integration or the ecological impact of tangible nonhumans working together to constitute a location.

Problematically, though they did reveal some insights about what materials and spatial arrangements seem to be most creative, all of these studies fixated on only the visual with their use of photographs and images. My project proposes the commitments of ambient rhetoric, as a corrective, because of their emphasis on multisensory integration within physical locations (Rickert 137). Blesser and Salter argue that multisensory integration “has been shaping and evoking (the human) sense of world... since early humans” (75; Rickert 137). They refer to caves discovered in France which may have been chosen for painting based on acoustic characteristics. Hieroglyphs of hoofed animals like bulls were more prevalent in chambers generating percussive sounds that mimicked hoof beats (Blesser and Salter 74; in Rickert 137).

The mere images of the cave paintings were insufficient for understanding how their originators dwelled within their physical and temporal spaces until they were networked with acoustic characteristics. Taking a cue from Rickert, my space analysis is more expansive not only accounting for sounds and sights as generative, but also attuning to “tastes, feels, and smells that immerse us in suasive forces that inflect but also extend beyond our immediate cognitive focus” (Rickert 138). Ambient rhetoric analysis may even uncover flaws in the methodology of the contemporary perception-based research. Who is to say that a subject viewing an image of rolling hills through a window and deeming it a creative environment wasn’t being furtively influenced by the context from which he/she was operating? Was the chair he/she sat in harsh and institutionalized? Did sterile cubicle walls brand shadows on his/her face and isolate him/her from human contact as he viewed it? Was the room stifling, quietly driving his/her desire for open spaces teeming with oxygen? Just as these researchers put place, language, and body into coadaptive... interaction” (107) for a richer understanding of humanity, my project will approach workspaces as sensory “immersive machine” (Rickert 107).

Along with an overemphasis on the visual, the current research in psychology is overly anthropocentric in its employment of questionnaires, which don’t delve any deeper in the creativity of space than human perception, resulting in findings marred by subjectivity. The research I cited above asked participants to identify nonhumans within spaces as creative or not creative. Dul and Ceylan asked participants to rate the presence of plants, natural materials, and manufactured materials according to their perception of them (Dul and Ceylan). Bryant sought subjective information in her study by posing eight open-ended questions about the physical spaces within each participant’s work environment. She then utilized observation of the workplace for her fourth activity, in which she focused on the physical components in the work

environment and how workers were interacting with them (M. Bryant 75). Environmental psychologists Vithayathawornwong, Danko and Tolbert issued a 50-question document based on seven factors of perceived creativity. Those factors were challenge, support, trust, freedom in the job, dynamism, and tension. In the second part of that study, the researchers devised a questionnaire more focused on the “interior architectural surroundings” of the workspaces. The questionnaire measured the “perceived impact of the physical work environment on the three components of dynamism, freedom, and trust” (Vithayathawornwong et al. 7). Finally, in Dale Landry’s unpublished dissertation, he asked 12 interior designers to produce drawings of their work areas and then explain, through an essay, how the areas encouraged creativity. He then used that data to produce a survey about what influences creativity in the workspace, which he sent to 213 North American designers. (Landry ix).

Surveys and questionnaires of this nature are not inherently flawed, but they do produce only partial results, for they are filtered exclusively through human perception. This approach is a residual element of social constructivism, which derived from post modernism but is insufficient for understanding the complicated interrelations in our society between person and thing, subject and object, and nature and culture. (Coole and Frost 4). Because social constructivism is open to everyone, and it gives everyone the license to cast doubts on commonly accepted truths, it is at best partial and at worst misleading to conclude that certain spaces embody creativity simply because these spaces seem creative to some study participants. Though postmodernism does attempt to overcome the modernist “purification” of nature from culture, according to Latour, it actually perpetuates the bifurcation by shifting more toward the cultural side of the divide (Latour *We Have Never Been* 65). It implies that human perception is the ultimate authority, and that nonhumans are only what humans associate them to be. Thus, sites

are deemed creative only if human beings associate the nonhumans in the surroundings with creativity. Bruno Latour calls this the “fairy position” in which humans “project their wishes onto a material entity that does nothing at all by itself” (Latour “Why has Critique” 237). In this mindset, nonhumans are relegated to a “screen on which to project human free will” (Latour “Why Has Critique” 241). In this case, the free will is the drive to be creative in the workplace.

This view is problematic because it asserts that when a majority agrees that an environment or texture feels creative it, in fact, becomes a creative environment or texture. The solid objects within that environment and the stable networks those environments create do not have independent stability but are subject to human whims. The foundational project of new materialism is to correct and reconceptualize the modernist bifurcation between nature and culture, subject and object, and person and artifact (Coole and Frost 4; Latour; Bryant; Harman *Tool-Being*). These results indicate only perceived creativity rather than creativity independently enacted upon a human by a nonhuman, reinforcing the bifurcation between culture and nature by asserting that objects are subject to the viewpoints of culture (Latour *We Have Never* 20).

My project incorporates two new materialist correctives to the fairy position (Latour ‘We Have Never’ 20). The first corrective is Bryant’s “flattened ontology” which aims to “diminish the obsessive focus on the human, subjective and cultural within social, political, cultural theory and philosophy” and replace it with a greater concern for nonhuman actants like natural entities and technologies (246) that shape creativity. The second is Latour’s concept of collectives, which centralizes all of society’s processes, which were previously obscured by an overemphasis on intentions, signs, meanings, norms, signifiers and discourse (Bryant 248; Latour *We Have Never* 106). Thus, this project is designed to observe the thinking and behavior that emerges

from assemblages of humans and nonhumans with a minimal approach to the human perception of nonhumans within a space.

Given psychology's historic commitment to perception, cognition, and attention, these findings do provide a starting ground for what kinds of nonhumans generate the perception of creativity; however, the perception-based approach is limited by epistemology, which focuses on how humans know objects, what the objects mean to them, and how they know what they know about objects. These priorities are on the cultural and linguistic side of the nature-culture bifurcation. Ontology, the main commitment of new materialism, entails questions such as 'how do I know about this object' (Latour "Why Critique" 244) and "what is this object?" (Latour "Why Critique" 244) along with what does the object have to do or be in order for it to make a change or alter a possibility (Bryant 43). My research will move beyond identifying environments that make people feel more creative and into environments that allow for creativity to be possible through humans and nonhumans distributing agency symmetrically across a network (Lanham; Rickert x). A new rhetoric, rhetoric which will be relevant as nonhumans continue to proliferate our workspaces, must expand the concept of attention beyond that which is limited to "subjective, intentional, or merely cognitive" (Rickert x). Ambient rhetoric is concerned not only with salient features of the physical environment, but also with those that escape immediate attention and can only be accessed through affect, ontology, and rhetoric. For this project, I consider creativity a "complex activity that has ambient dimensions" (Rickert xi). Ambience, in this sense, is multifaceted and ecological, so it elucidates "the materiality of ambient environs, our affective compartments, the impact of that which escapes conscious notice, and the stumbling block presented by the finitude of knowledge when facing the plenitude of the world and its objects" (Rickert x). Knowledge workers must be attuned to the

nonhumans in workspaces that act independently of their understanding. For example, they should be aware of how a tool that they use to brainstorm such as a dry erase marker shapes the brainstorming itself and how the ideas, the actions, and the behavior of the brainstorming process would be different if it had involved another set of nonhumans such as a pencil and paper. As with all major philosophical and cultural breakthroughs, decentering the human and the baggage of perception elucidates the role that nonhumans play in every aspect of “human flourishing” (Rickert). Before demonstrating how new materialism has been applied to rhetorical perspectives of space in the research, I will address one more approach in the cross-disciplinary research that gets us closer to an ontological perspective of spaces and nonhumans: the notion of affect and its role in creativity.

Affect and Workplace Creativity

Cross-disciplinary research that accounts for affect or “visceral forces beneath, alongside, or generally other than conscious knowing” (Siegworth and Gregg 1) gets closer to overcoming the perception-centric analysis because it accounts for precognitive responses such as emotion; however, it still falls short in embracing an ecological approach to ambience and it relates mostly to the salient elements of settings rather than those elements that tend to withdraw from human understanding.

A team of researchers consisting of both psychologists and business administration scholars tested multiple theories of affective creativity in a 2005 meta-analysis. Their goal was to survey research in psychology to determine whether negative (Mueller, and Staw 370, as qtd. in Amabile 369) positive (Amabile 369) or ambivalent emotions generated creativity. They also explored whether affect and creativity emerge simultaneously (Sandelands; Csikszentmihalyi; Deci and Ryan, as qtd. in Amabile et al. 375) or if affect is an antecedent (Wallas; Simonton, as

qtd. in Amabile et al 363) of creativity. Amabile et al. conducted a longitudinal study with over 200 professionals who designed products, developed processes, and/or solved complicated organizational problems. To track affect and creativity, participants created daily questionnaires and monthly peer-rated questionnaires about the work they do. Researchers coded 364 narratives that emerged from the questionnaires in which participants described generating ideas or solving problems (Amabile et al. 381). Based on that qualitative data, Amabile et al. found that positive affect is the strongest link to creativity because it frees up cognitive material for processing, leads to a more complex cognitive context, and improves cognitive flexibility (Isen; Amabile et. al 369). Thus, theoretically, a physical environment that stimulates positive affect stimulates creativity.

However, it is not clear what specific nonhumans within physical environments stimulate positive affect and whether or not an artifact in and of itself stimulates creativity or an ecology of nonhumans does so, for there are only two main studies in the literature that identify material elements that stimulate positive affect. One study inquired whether the aesthetics in bars and restaurants stimulates positive affect (Wasserman et al). In another study, a graduate student in interior design at the University of Florida studied the link between positive affect in the workplace and creativity by observing work at a Florida advertising agency known for its fun atmosphere (Miller 84). Both researchers across disciplines concluded that dimensions of affect can be evoked by “multiple and varied elements” such as dynamic workspace, symbolic design, saturated color hues, fun details, eccentric geometries, creative license for employee expression, and novel lighting (Wasserman et al 17; Miller 84). On the positive side, these studies explore the pre-cognitive responses to creativity in physical workspaces; however, they don’t provide clear enough information on the specific nonhumans that promote positive affect, nor do they

take an ecological enough approach, inquiring positive affect results more from single nonhumans than assemblages of them.

Additionally, though affect gets us closer to the kind of understanding I hope to glean in my research about how nonhumans enact agency upon humans to shape thinking and acting, the research only attends to the salient elements of affect. An innovator “attuned” to affect is attuned only to that which “presents itself” (Rickert xiii) at the detriment of material elements that “withdraw” (Rickert xiii) yet shape creativity. To withdraw means that objects relate only to themselves and never to their environment, escape full representation of their ontology with language, and operate independently of their relations to other objects” (Bryant 265; Bogost 123; Harman *Tool-Being* 15). To better understand objects, the argument asserts, scholars must learn to retrieve objects from withdrawal (Bryant 265). One famous illustration of how objects emerge from withdrawal is Heidegger’s broken hammer (Harman *Tool-Being* 15) in which a user haplessly pounds a nail when the hammer suddenly breaks and the user becomes aware of its existence. In breaking, the tool remerged from withdrawal beneath the user’s cognition (Harman *Tool-Being* 45; L. Bryant 21; Rickert xiii).

Affect can give us a more comprehensive perspective of innovation than perception, but taking merely an affective approach to how space shapes creativity still leaves us wanting because the current research doesn’t account for the awareness of affect. Rickert’s notion of “attunement,” however, does. According to him, attunement is a “fundamental entanglement” with the environment that makes people within the environment “wakeful to ambiance” or aware of how the environment shapes them (Rickert 9). Therefore, Rickert acknowledges the importance of affect but expands it to account not only for emotion and mood, but also for how one finds oneself “embedded in a situation” and one’s “disposition in the world” (Rickert 9).

Attunement is realized through posing ontological rather than epistemological questions as the latter depends only on representation and not existence (Bryant 16; Bogost 6). Rather than asking how knowledge workers feel about aesthetics, how they perceive eccentric geometric shapes as creative, or “how and whether we know objects” (Bryant 18), attunement asks what are these things? What possibilities do these things allow for in the world? Ontology allows us to examine the nonhumans populating the workplace as symmetrically agentic to the people populating the workplace, which is a key component of my second research question about how innovators enter into a symmetrical network with nonhumans when ideating. This network is something like what Levi Bryant calls a “democracy of objects” in which “humans are not excluded but are rather objects among the various types of objects that exist or populate the world, each with their own specific powers and capacities” (20). Latour’s actor-network theory acknowledges the same, calling for a reconceptualization of the social “not as a special domain, a specific realm or a particular sort of thing, but only as a very peculiar movement of re-association and reassembling” (Latour “Reassembling” 7). Latour reassembles entities that are not easily recognizable as social in the former sense of the word, and this includes both the humans and the objects Bryant is referring to (Latour “Reassembling” 65).

Thus I will proceed with this project with the assertion that creativity can emerge as a result of humans and nonhumans networking with one another during ideation. Additionally, I will acknowledge that human beings can leverage nonhuman actants to help push their programs of action of creativity through persuasion but that, occasionally, the agentic nature of actants can take over and launch antiprograms that oppose these programs of action (Latour “Berlin Key” 19). Because of the materiality of these actants, my research requires a specific analysis of

physical space that is only available through rhetoric scholarship, which takes a more complex approach to how space shapes behavior than the mere perception of space or the affect of space.

Rhetorical Conceptualizations of Space

Though limited, there are some seminal scholarly works in the field that emphasize the rhetorical nature of space that serve as precedents for my project. The term “rhetorical space,” in fact, has surfaced in the literature defined as “the geography of a communicative event that may include cultural and material arrangement” (Mountford 42; Code 1; Marback 7). I will now address scholarship on the rhetorical elements of space including space as text, the social production of space, space as a site of bodily interactions, and the embodiment of cultural and social values in space. Within each area, I explain limitations of the approaches, which generally result from an overemphasis on the social and cultural to the detrimental of the material.

Space as Text

The first precedent for a rhetorical conception of space in this project is the viewpoint that space can be interpreted, interacted with, and responded to as if it were a text. Ackerman acknowledges that spaces where we work can be “read” the way one would read a book (85). In asserting this, Ackerman implicated rhetoricians and literary theorists, calling upon them to improve their fluency in analyzing sites as texts of “location, definition, and interpretation” (Ackerman 86; Lefebvre 191). This means both the designer of the site and the examiner of it can engage in rich analysis of the space. Ackerman advocates for spatial analysis as a “representational process” accounting for how the designer designed a space and how a user uses a space in a process of “location, definition, and interpretation” (86). Problematically, like the perception-centric approach of psychology research, his work focuses too much on representation and interpretation of the space. Perceiving space as text implies an awareness of how texts can be created and designed to enact agency upon the readers of the texts. However,

Rickert's attunement also accounts for "immersion as well as specificity" (Rickert 5).

Ackerman's reading of a site fails to account for the emplaced body of the reader and how the reader is acting upon and being enacted upon by the site. He mainly says that spatial analysis involves entering a "living laboratory for finding and naming the vitality of everyday life and those structures that oppress it" (Ackerman 88). Ackerman overlooks symmetrical agency in the space, accounting for both the material and cultural aspect of a space but not acknowledging the importance of the analyzer of that space and how he/she is helping to produce it. A new materialist approach would account for this because it would assert that all actants within the network of space are equally responsible for the causation in the space.

Additionally, Ackerman propagates the bifurcation of the symbolic and the material by claiming spaces are "representational," and "created through design" (101). The notion of representation, though, is epistemological. It says that an analyzer only has access to space through what it represents or the intentions of its creator. He fails to account for the ontology of sites instead of or in addition to the epistemology of them, which imbues the nonhumans within that space with agency. This, then, is a more complex understanding of space that accounts for the human intention behind it as well as the ontological influence of the objects within it and how those spaces shape action.

The Social Production of Space

In addition to conceiving space as a text that can be read, interpreted, and analyzed Ackerman's research also acknowledges space as a commodity or product as does Lefebvre. Ackerman illustrates the idea with a study of the city of Anthem, Arizona, which he says is "imagined, designed, produced, and sold... as a space that represents a way of life" (Ackerman 99). The city's designers opted for a stratification of home and lifestyle. Neighborhoods are divided by price; the more expensive the neighborhood, the more access residents have to local

city services such as schools and recreational opportunities near their homes. Ackerman concludes that Anthem is a commodification of culture and predicts that it will not succeed because it attempts to exert too much control over its residents and doesn't allow scope for residents to produce space in their own way; it, essentially, alienates a large part of the spatial milieu of social sites (100).

There are substantial implications on my project for considering space as commodity and analyzing the steps that produced that space. The innovation sites I researched are branded and marketed as investments that will provide corporations with a return, which can be measured in abundance and quality of ideas for new products. In fact, the founder of one of the spaces I analyzed promises investors a "return on ideas" from his space and touts the world record he holds for the most ideas generated with one group (Lamman). More broadly, corporations promote the value of these spaces as connection-machines and creativity-machines that will link current innovators and even outside community members with the innovation networks the corporations have made durable during their existence. Thus, this space-as-commodity concept is helpful for identifying how innovation site directors promote their spaces as products.

However, most of the means by which space is produced, from Lefebvre and Ackerman's points of view, are anthropocentric and only exacerbate the modernist divide by overemphasizing the cultural, symbolic, and linguistic. For example, he says space can be produced by the history and its results, the practices people engage in while in those spaces, the way space is represented by scientists and planners through their tools, and the way space is described by both inhabitants as well as outsiders such as philosophers and anthropologists (Lefebvre 11-15; Ackerman 84). Absent is the perspective of space of what Latour calls "the missing masses" of these means of production, which are the nonhumans that "knock at the door

of sociology” and beg to be noticed as the tools and nonhumans that mediate the production of space along with the humans (Latour “Where Are” 154). My project foundationally embraces the space-as-commodity perspective, but also expands upon it by including nonhuman actants in tracing the production of those spaces, which includes nonhumans like tools and technologies within the innovation sites. It also includes human bodies within those sites and how the nonhuman actants are interacting with those bodies.

Space as Site of Bodily Interactions

Situated within those spaces are material human bodies, and a corpus of research in rhetoric has focused on not only how rhetoric is manifested in the human body as artifact, but also how physical space permits and/or forbids the body to “intersect with rhetorical practices” (Pigg 3; Hawhee 11; Selzer 7; Crowley 186; Haas 226). The research of bodies within space asserts that bodies have intentionality; bodies are situated among other material actants; spaces provide access to places of bodily practices, and space allows for and shares stories of bodily use (Pigg 3). This space-body interaction scholarship is an important precedent to my project as it describes how the intentionality of bodies can be shaped by material actants that enforce programs of action, the bodily practices innovation sites afford, and the narratives that bodies interacting with nonhuman actants in sites reveal (Latour; Pigg 30).

On occasion, Pigg attends to the material in her research. In her literature review, for example, she states that “physical actors like technologies are an important part of the bodily action of rhetoric and writing situations” (Pigg 17), so the way people engage with technologies reveals the structure of their work and the cognitive and material storehouses they call upon during composition (Pigg 17). She also discusses some idiosyncratic elements of the coffee house ambience that get folded in to the writers’ processes such as frequent interruptions for people watching (Pigg 35). Her focus is on the construction of relationships between objects and

people to mediate writing work channels; however, her purpose is more to elucidate the writing process than to identify the material influences of the coffee shop space on that process. In fact, she dedicates one chapter to the temporal sequence that writers undergo as ritual when they first set up a space in the coffee shop (Pigg 18). These rituals are practiced in all spaces used for composing such as libraries, home offices, residence hall lobbies, and computer labs and reveal more about composition than they do about the coffee house so the focus is not on context. Furthermore, they assume a linear progression, which is a modernist commitment (Latour *We Have Never* 13). ANT and ambient rhetoric favors emergence (Latour; Rickert xi) and Latour's notion of nonlinear network construct of the movement of time (Tirrel 176; Latour "Technology is" 114). A material analysis of space elucidates rhetorical qualities of locales. My focus will be more on the ambience of the innovation workspace as a catalyst for creativity than on the innovation process itself.

Space Embodying Cultural/Social Values

Finally, in rhetoric research, space has also been conceived of as a "signifier of cultural value" (Lefebvre 12; Ackerman 89). Research by Brinkley and Smith and Mountford scrutinizes cultural values of gender embodied in material, illuminating how inherent inequality between the genders can be enacted. Brinkley and Smith, in their work, critique the teaching of college composition as entrenched in the values of Ancient Greece (3). Channeling Lefebvre, they assert that the space and era of Ancient Greek rhetoric is "literally filled with ideologies" (Brinkley and Smith 3). Classical Greek rhetoric was exclusionary, they say, and is exclusionary still because it emerged from the space-time of ancient Greece, which rarefied women, slaves, and non-citizens (Brinkley and Smith 2). The argument, then, is that this exclusion has been reproduced in the teaching of composition, and that it marginalizes members of the population, mimicking the way the ancient Agora marginalized members of its population in its material space-time. Mountford,

in her analysis on the depiction of pulpits in literature based on culture and gender, argues, that “the cultural is the grid across which we measure and interpret space, but also the nexus from which creative minds manipulate material space” (42). The material space is pivotal to the portrayal of those who dwell within it and the cultures that have created it. To illustrate, she wrote of a preacher in *Moby Dick* whose pulpit towers above the congregation and requires a hanging ladder like one would use to climb a ship. After climbing the pulpit the preacher rolls up the ladder so no one can join him in his elevation. Mountford said this portrayal comes from a phallo-centric, patriarchal notion of “Muscular Christianity” (Mountford 42).

While Mountford takes a cultural-critical approach to the rhetorical analysis of space, rooted in the notion of “gendered locations” (63; Code 10), Greg Dickinson analyzes space as embodying human values obscured by postmodernism consumerism. In his spatial rhetorical analysis of a Starbucks location he zeros-in on the social value of connection to the land, authenticity, and locatedness (6). He says this is an essential corrective to the post-modern fragmentation of space between “global and local, spectacle and authenticity, consumer culture and individual identities” (Dickinson 7). Starbucks materially embodies this connection, he argues, through its displays of raw coffee beans, use of the color green, natural wood grain tables, photos of the fields that produced their coffee beans, sounds of the beans being produced into product, and scent of fresh coffee (11). This is an attempt to relocate dwellers despite the spatial fragmentation of consumer culture.

This cultural-critical scholarship of space does provide a rhetorical foundation for an analysis of everyday spaces and their embodied values because of its emphasis on the material as equally important to the symbolic in rhetorical analysis (Mountford 48; Brinkley and Smith; Dickinson 3). However, Brinkley and Smith are concerned with the rarefying (Foucault; 2) culture

of ancient Greece, so they overlook the material aspects through which the rarefaction was enacted. Archeological research now tells us that the Agora, for example, was flanked on four corners by Hermes statues with inscriptions that read “I am the boundary of the agora” (Camp 18; as qtd. in Stratton 15). The Hermes are nonhuman actants that translated the wishes of the dominating powers of the democracy to mark the four corners of the Agora and indicate where noncitizens and women were not allowed. This is where my research picks up, asserting that space can rarefy, but that it does so via a network of human and nonhuman actants and is not exclusively cultural.

Therefore, I expand upon the research that elucidates the cultural and social values of space by acknowledging the material elements of space and their roles in enacting certain behaviors. This is relevant to my second research question which inquires about the material power of nonhumans to enact oppressive ideologies upon innovators. An illustration of this material approach to oppression can be found in Langdon Winner’s example of Robert Moses who designed bridges in a certain neighborhood in New York to keep busses from entering the neighborhood (Winner 23). The material design rarefied those who ride busses, who were almost always minorities and/or lower-class citizens (Winner 83). This did happen in Ancient Greece and is still happening today in innovation sites, but my research questions are rooted in the rhetoricity of materials. It acknowledges that the linguistic and symbolic paint only half of the picture of how values get enacted upon innovation site participants. My understanding of the material rhetoric of these sites will come from the scholarship in rhetoric theory that has sought to conceptualize rhetoric as material. I will address those theories now and then address seminal research projects demonstrating a material approach to rhetoric.

Materiality of Rhetoric

Spatial analysis and its rhetorical implications are of interest not only because sites are concrete and tangible manifestations of rhetoric, but also because my project, largely, is a rhetorical site description of rhetoric-rich locales designed to exact a culture of innovation and cultivate creativity. This cultivation occurs not only through the linguistic nonhumans within the sites such as verbal and written instructions for how to innovate, but also through the nonhumans that populate the space but can't be deemed linguistic. A precedent for this approach is the material rhetoric movement, which has gained momentum in the last 10 years. The theories of Michael Calvin, Selzer and Crowley, and Carol Blair sought to “bring rhetorical studies to bear on issues of materiality” (8). I will elaborate on their critiques of the linguistic-centric approach to rhetoric and then summarize some of the research they employed to solve the issue.

In the rhetoric scholarship, the common critique of this exclusively linguistic approach to rhetoric is that it overemphasizes the symbol as a way to represent perception without acknowledging the materiality of the symbol itself (McGee 18; Biesacker and Luciates 3; Blair 18; Selzer 3; Dickinson 5). As Blair indicates, symbols are “articulated members of a language system” (18) so viewing them as ephemeral and referential to meanings beyond themselves accounts for only part of the consequentiality of rhetoric (Dickinson 5; Blair 19). When we focus on the “aboutness of signs and representations,” Levi Bryant asserts, we “forget that these simulacra are not simply about something; they are something” (“The Gravity 21; Dickinson 5; Blair 180). This error is apparent, for example, in history when the linguistic account of an event carries more weight than the event itself or in anthropology when our understanding of heterogeneous cultures is reduced symbols their members preferred. Even contemporary nonhumans like “genes, genders, jeans and genetics” are said to be constructed by language, implying that language “matters more than matter” (Selzer and Crowley 3). No message exists

without matter, a tangible manifestation of it. Additionally, the solely-linguistic approach to rhetoric fails to account for its partisan nature or its ability to enact power upon subjects, Blair says. She faults the liberal humanist tradition out of which linguistic-centric rhetoric has emerged as “instrument under the control of the rhetor” (21), which has resulted in a focus on the production of rhetorical texts to the detriment of the effects of those texts (21).

In one attempt to solve this ephemeral symbol issue, scholars called for a rhetorical analysis of “nondiscursive texts” such as the visual and spatial elements of the everyday resulting in several different material-centered studies (Blair 20; Dickinson 16). One commonly cited work is Blair’s piece in *Rhetorical Bodies*; it argues that memorials are prime exemplars of material things not wholly dependent upon language to convey meaning or consequence (Blair 16; Blair and Michael 19). Things can “speak” she concluded by their reason for existence, durability of building substances, possibilities of reproduction and preservation, relations with other things in their physical setting, and physical actions they persuade humans to take (Blair 50). Her work has opened rhetoric scholar to projects like mine which focus on the design of space based on her claim that “Architecture like natural language use express degrees of significance not just through its symbolic substance but by its existence” (Blair 37). Blair focused on the actions of people in response to the “prescribed pathways” or the “communal spaces” material locations afford. Joan McAlister, however, elaborated on the larger scale effect of rhetorical material; her article in *Rhetoric, Materiality, and Politics* examined the relationship between subdivisions as material locales in the early 21st century and the notion of rootedness they were intended to convey upon residents. Particularly interested in the material aesthetic of the subdivision, McAlister extrapolated the rhetorical functions and political import of style from Weil’s writings to illustrate the roles materiality plays in shaping the social practices of

subdivisions (Weil; McAlister 102). She concluded that the solutions subdivisions purport to offer for dislocation are problematic because subdivision aesthetics encourage “tribalism and substitute nonhumans of material culture for the social practices that produced them” (McAlister 101), replacing a general authenticity with a false one. Authenticity, or at least the perception of it, was a key consideration in Dickinson’s material analysis of a Starbucks and the way its materiality attempts to enact authenticity upon, perhaps, a similar audience to McAlister’s subdivision audience (5). Dickinson highlighted nonhumans such as coffee, coffee beans, color, décor, and, furniture. In an approach rare in the material rhetoric literature, Dickinson even acknowledged the rhetorical characteristics of the smell of fresh coffee which he says is closely connected to notions of the natural (Dickinson 11; Rickert 35). This is one of many attempts to ground Starbucks customers in the organic qualities of the land in attempts to overcome the postmodern displacement resulting from homogenization of corporate chains (Dickinson 12). Similar to McAlister’s subdivision aesthetic, the Starbucks aesthetic “substitutes nonhumans of material culture for the social practices that produced them” (Dickinson 12) while assuring that the problem of authenticity has been solved (Dickinson 12; McAlister 101). Conceptualizing spaces as texts makes them nondiscursive; they are not necessarily more material than a political speech, but language, the ultimate symbol is missing so spatial texts illuminate the materiality of rhetoric (Dickinson 6).

I agree that treating rhetoric as merely symbolic or linguistic affords a partial understanding of both its consequences and its political implications or “partisanship.” In fact, the purpose of my research is to analyze innovation sites not for their mere use of language or symbol but for the way the sites enroll material nonhumans and the rhetorical effect those nonhumans have on professional innovators. My first research question acknowledges that

innovation designers often enroll nonhumans to enact viewpoints upon innovators and direct their thinking and acting much like the designers of the memorials (Blair), Starbucks locales (Dickinson), and subdivisions (McAlister).

These attempts are all based in the notion that the symbol itself contains material force that is often overlooked. However, the notions guiding the materiality of rhetoric movement and the research I addressed won't help me answer my second and third questions because my questions decentralize the human in the practice of rhetoric, inquiring how materials themselves, apart from human intention or cause, often network symmetrically with humans to enact agency or even enact agency upon humans without their awareness. Both Dickinson and McAlister root their findings in association, how humans perceive of the material spaces from their anthropocentric perspective. Dickinson says that the images of Italy, photos of European Cafes, and the green of the Starbucks logo "associate Starbucks with cultural authenticity" (15) to the point that these material nonhumans are symbols pointing to meanings beyond themselves rather than material actants with their own agency; he also treats Starbucks as a site of human ritual and an enculturation whose dwellers know a language and conventions for behavior (how to order, how to wait, what to order, etc.) (Dickinson 18). This, again, is culture-centric; it is not focused on the agency of the Starbucks site but on the perception of those in within it. Similarly, McAlister's analysis is anthropocentric as well, bifurcating the subject and the object and nature and culture by stating that the subdivision has attempted to solve social ills (101) without accounting for the mutual shaping and being shaped of human beings. The research that gets closest to decentralizing the human and acknowledging symmetrically agency between human and nonhuman is Blair's work, for she acknowledges that commemoration spaces direct vision to particular features, serve as destinations, summon people by interrupting their walking trajectory,

prescribe pathways and directions of movement, and create communal space for communal participation (Blair 45-48).

Thus, though scholars have attempted to devise theories conceptualizing materiality as rhetorical, I contend that they still don't satisfactorily resolve the bifurcations between nature and culture, humans and nonhumans, and subject and object because they don't account for general symmetry between these forces. However, the contemporary research that addresses and solves this problem, and the framework I used to frame my research questions and will use to analyze my data does. It is the framework of material semiotics. I will now explain how the foundational theories of material semiotics are different from a material conception of rhetoric and then elaborate on specific material semiotic frameworks I'll employ for this project which are Latour's actor-network theory and Rickert's ambient rhetoric theory.

Material Semiotic Frameworks

Semiotics is the study of signs and signifiers and their interaction with one another to ascribe meaning in the world. Semiotics are accounted for in all of the previous research I addressed, but they are largely linguistic semiotics. Material semiotics expands the sign not only to the linguistic, which is symbol-heavy and anthropocentric, but also to the material, which should provide a more thorough understanding of the consequences of rhetoric in the innovation spaces. Material semiotic conceptualizations of rhetoric proposed in the research differ from the materiality of rhetoric because of these three main principles mainly related to notions of agency: nonhuman agency, general symmetry, and semiotic relationality (Callon and Law 2).

With the exception of Blair's work on the materiality of rhetoric (50), material rhetoric scholars stop short of ascribing nonhumans with agency. They theorize that agency can't exist apart from intentionality; however, scholars in material semiotics argue that objects are

“generative mechanisms” and have the power to produce differences in the world at the level of their own qualities (Bryant 93; Bennet 457). Objects, researchers indicate, “Authorize, allow, afford, encourage, permit, suggest, influence, block, render possible, and forbid in ways that defy the human will (L. Bryant 93; Latour *Reassembling* 72; Cool and Frost; Bennett 446). According to Latour, all of the previous actions are modifications of states of affairs, changes in the world, and all nonhumans are capable of such changes (70) without intention. The defiance of human will contradicts the anthropocentric approach view that humans filter their interaction with objects and nonhumans through their own wills and associations. For those who deny this viewpoint Latour challenges them to “hit a nail without a hammer, boil water without a kettle,... walk in the street without clothes,... or zap a TV without a remote” and determine whether one’s context changes based on the presence or absence of nonhumans (Latour *Reassembling* 71). In short, because of the agency of nonhumans the ontology of every actant regardless of size causes changes in reality. My research questions were crafted to analyze the reality of my observations as shaped by the presence of agentic nonhumans within the sites and to consider how they would lead to different causations with less agentic objects or different agentic objects. In John Shiga’s “Translations: Nonhumans from an Actor-Network Perspective” he utilized the notion to describe the role of common nonhumans like MP3 players in “constituting the social world”, in everyday life (40). He found that analyzing technologies as agentic nonhumans reveals more about their social implications than about technical sophistication because agency allows for all nonhumans whether highly technical constituents of the “internet of things” or the primal, low-tech speed bump (Shiga 53; Callon and Latour “Don’t Throw Baby” 361) to be extensions of the social. Latour calls this extension of the social “society made durable” (“Technology is 103). Latour insists that we can understand objects by showing their

engagement with the social elements of society and we can also better understand society by elucidating its constituent nonhumans. Rickert cites one of Latour's famous illustrations to support his claim about material manifestations of society: the hotel key example. An innkeeper tired of guests accidentally stealing his room keys employs material nonhumans like a sign, his voice, and a large bolt tied to the key to persuade the guests to not put the key in their pocket (Rickert 206; Latour "The Berlin Key" 19; Latour "Technology is" 106).

Some of the research of material rhetoric scholars like Blair may imply the agentive nature of nonhumans like when Blair, for example, says that the material features of memorials guide people down paths (50). However, as indicated above, none of the scholars researching the materiality of rhetoric ascribe nonhumans with agency, nor do they acknowledge a symmetrical distribution of agency between human and nonhuman; therefore, they still maintain a bifurcation between the human realm and the natural realm. Callon and Latour's principle of general symmetry corrects this vacillation between "natural realism" and "social realism" with the perspective that nature and society are instead, twin results (Callon and Latour "Don't Throw the Baby 348).

Latour explains his thinking:

The name of the game is not to extend subjectivity to things, to treat humans like objects, to take machines for social actors, but to avoid using the subject object distinction at all in order to talk about the folding of humans and nonhumans. What the new picture seeks to capture are the moves by which any given collective extends its social fabric to other entities. ("Response" 273)

The notion of general symmetry actualizes my second research question, which is about how the humans and the nonhumans in innovation sites join forces with one another, building

networks that generate ideas. This move has precedence in the material semiotic rhetoric research in which scholars attend to the “distributed and composite nature of agency” (Bennett 446). Bennett’s investigation of the North American blackout of 2003 is one of the most cited of the material semiotic rhetoric research centering on the general symmetry of agency. Following Latour’s prompt to better describe the agency of an assemblage by analyzing a “breakdown, accident, or strike” (*Reassembling* 81), Bennett disentangles the actants implicated in the outage such as “coal, sweat, electromagnetic fields, computer programs, fantasies of mastery, static, legislation, water, economic theory, wire, and wood” (Bennett 448; Rickert 211). By analyzing the nonhumans involved as generally symmetrical to one another in agency, she illuminated *some* of the causes of the outage as the human desire to redistribute power and to make money and electricity’s tendency to arch, unstable electron flows, and wildfires (Bennett 463; Rickert 211). Bennett does acknowledge that the culprits are infinite and complicated, and her objective wasn’t to place blame as to describe the vast, unwieldy assemblage of agentic humans implicated in the breakdown (Bennett 463).

Given that general symmetry ascribes agency to all actants equally, meaning emerges not from one isolated actant but from an assemblage of them. In another move that limits the propagation of human-nonhuman bifurcation, material semiotic scholars have devised the concept of “semiotic relationality” (Law 7). It posits that signs have meaning only in relation to other signs; thus if we expand from linguistic semiotics to material semiotics it follows that actants have meaning only in relation to other actants, both human and nonhuman (Law 3; Law and Mol 58). Entities, essentially, give each other being, and we can best understand the being of entities by working our way through the webs of materialized relations in which all actants fit (Law and Mol 58), epitomizing a way of knowing or behaving based on interrelatedness (Law 2;

Mol 59). In this view, it is misguided to assume that whatever the humans in Starbucks associate with the interior and décor of Starbucks has any meaning beyond mere subjectivity. The meaning of an actant, instead, emerges from that actant's placement within a robust assemblage of nonhumans that all affirm its meaning. For example, ANT would conceptualize the color green on the Starbucks sign not as an association of a jungle originated by humans but as an actant withdrawn from a robust jungle network of moist heat, maps of jungles, cartographers who've made maps of jungles, their tools, flat leaves, fluorescent colors, tropical birds, rich soil, and even cultural ideas of jungles that join forces. The more the Starbucks fresh network enrolls jungle-connected actants, the more durable the network will become in also imitating the humans of Starbucks and all of their peripheral nonhumans into the assemblage. Green's meaning emerges from the network in which it ontologically belongs and not the epistemological whims of humans perceiving the color. My research of innovation spaces will not be rooted in human association of the material nonhumans but in the networks that these nonhumans are part of and the other nonhumans that these networks enroll to strengthen the assemblage. Latour proposed that the being of entities is available to us in semiotic relations by studying innovations, granting objects distance in time and space from human actions, analyzing accidents or breakdowns, and using archives to reproduce the state of crisis in which the actants were born (Latour *Reassembling* 80-81).

Notable articles in the scholarship employing semiotic relationality have followed Latour's methods to deconstruct the durability, domination, and power of networks. Law's inquiry on the Portuguese's maritime domination from the 15th to the 18th centuries, for example, concluded that the Portuguese "control(ed) half the world" by leveraging a vast network of things such as ships, sailors, navigators, spices, wind, and astrolabes (Law "On the Methods"

262) Isolated, these nonhumans had little consequence but unified they actualized dominance (Castells 775; Sismondo 81). In *Aircraft Stories*, Law explains such dominance resulting from actants being “drawn together” without actually being centered (Law “Aircraft Stories” 12). His collection of essays analyzing development of the TSR2 aircraft demonstrates that nonhumans are subject to complex contexts but that they maintain relationality with knowledge, subjects, and objects and gathering meaning from the assemblage of these (Law “Aircraft Stories 12). Much like Law ascribed power to the contexts of aircraft construction and artifacts enrolled by the Portuguese for maritime domination, Latour and Woolgar’s ethnographic study of scientists translating objects into knowledge in the laboratory credited tools like centrifuges, vacuum pumps, furnaces, scales, and lab reports for the exclusive power to manipulate the objects under study (83). Their work illustrates semiotic relationality in action as each tool’s purpose and meaning is dependent upon the assemblage of every tool, which takes the form of the laboratory (83). Also committed to the principle of semiotic relationality was Latour’s work on Louis Pasteur as a material semiotic collective (Latour “The Pastuerization” 23), Callon’s study on the assemblage of actants responsible for the electric car (“The Sociology of” 21), and Law and Callon’s scholarship on of the Scallops of St. Brieuç Bay (Callon “Some Elements” 198). Though focused on completely different subject than innovation and the nonhumans of innovation spaces, this research is closely aligned with my own project. After surveying all of the cross-disciplinary research that has addressed creativity, the rhetoricity of space, and movements toward material conceptualizations of rhetoric I’ve arrived at my chosen framework, which is most suited to my purpose and research questions: a material semiotic analysis of innovation sites. It assumes the principles of agentive nonhumans, general symmetry, and material relationality. Most of the principles are rooted in Latour’s actor-network theory, which

I've referred to frequently above, but I also employ Rickert's material semiotic approach of ambient rhetoric theory to the analysis. I now briefly define these two sub-theories and their commitments. I then illustrate the seminal scholarship that applies these approaches to the study of space and the study of innovation.

Ambient Rhetoric

Rickert is one of the few rhetoric scholars thus far with a project committed to a new materialist approach to both spatial and material analysis from a material-semiotic perspective. He promotes the expansion of rhetoric as the economics of attention in *Ambient Rhetoric*. He says that our conceptualization of place is changing as the "mind" is now being seen as extending beyond the body. Space is a participant in human activity rather than just a backdrop, and it is not only the place where bodies do action, but also the catalyst with which the bodies act. This extends to new ways of looking at the mind as well. Many philosophers now recognize the mind as functioning within a matrix of nonhuman elements. In a way, humans are no longer determined by what they think but also by the network they enter. The mind is only a small actant within that larger network where humans and nonhumans engage equally with one another. The network includes tools, objects, and spaces (Rickert 40-43). Rickert says that for rhetoric to remain as the study of social action, human thinking, and the expression of ideas scholars must begin exploring rhetoric as it occurs among networks of humans and nonhuman actants (Rickert 42). This is why rhetoric must be expanded into the elements of the environment as they inform our action and why ambient rhetoric is a pivotal framework in my research of innovation sites.

Because I will elaborate on the theory in the research and methodology section from which I will distill units of analysis, I only briefly outline Rickert's main assertions here:

- Attunement to ambience entails the “dissolution of the subject-object relation,” the abandonment of exclusively representational frameworks of discourse, an awareness of the process of nonlinear emergence, and the incorporation of materiality as pivotal for social interaction and action (Rickert xii)
- Rhetoric as the “economics of attention” (Lanham; as qtd. in Rickert x) requires that we attend to the materiality of our ambient environs, “our affective comportments,” and that which escapes our conscious awareness (Rickert x).
- Agency must be conceptualized as disbursed and entangled in ambience, populated by human and nonhuman actants (Rickert xv).
- Objects are naturally withdrawn, yet the only attempt we’ve made to remove them from withdrawal is scientific analysis, and rhetorical analysis and inquiry is a fresh way to better understand ambiances and how they shape us.
- The extension of kairos beyond “the opportune moment” (Onians 343; E. White 13) and into the opportune place, providing for the possibility that material place can be seized and embraced for rhetorical action. Kairos, in this view, is an “experience of encounter” (Miller 169; Rickert 912) resulting from the dispersal of human thought into material place that serves as an additional means of persuasion.

Actor-network theory

Many of Rickert’s arguments are rooted in Latour’s ANT, which attempts to overcome harmful bifurcations of subject/object, nature/culture, and things/people by conceptualizing the social as a network across which agency is equally distributed between humans and nonhumans. Again, because Latour’s theory is pivotal for my units of analysis as well, I will only briefly

outline the arguments here and elaborate on them in chapter three. I also apply the elements of ANT to a discussion of relevant research that addressed innovation in physical space.

- The social should not be limited to a realm isolated from the rest of society (Latour *Reassembling* 16).
- We must never confuse causes and their intermediaries with collections of mediators all working together to bring about some kind of action whether they've joined forces intentionally or unintentionally (Latour *Reassembling* 62).
- Objects have agency that is symmetrical to human agency (Latour *Reassembling* 77).
- Useful accounts of scientific experiments, observations, or phenomena must carefully trace all of the connections and associations that made that phenomenon occur. This should include contributions from humans and nonhumans (Latour *Reassembling* 133).
- When actants are enrolled into networks they undergo translations that induce “two mediators into coexisting,” aligning their goals with the goals of the larger enveloping network (Callon 2; Shiga 40; Latour “Technology is” 114; Latour *Reassembling* 108).

Though no scholar in STS or PTW has yet conducted research in which a network itself is a material location, geography scholar Johnathan Murdoch's research in *Geoforum* acknowledges that ANT can describe how spaces connect “in ways which permit certain actors to determine the shape of others from a distance” (362). In explaining how spaces permit this “remote control” (362) as he calls it, Murdoch classified spaces either as spaces prescription or spaces of negotiation (362). The distinction is analytically useful because “it allow us to say something about network construction and the forging of network spaces” and that it leaves room to study ambivalence, tension, and marginality which are often overlooked in other ANT

analyses (Murdoch 364) and are especially useful in the rhetoric of innovation because of the common clash between creativity and corporations. Thus, it is useful to me because I'm seeking to understand innovation spaces as constructed networks that both enroll and attempt to defy ambivalence. Importantly, Murdoch avoids bifurcating spaces of prescription from spaces of negotiation, asserting that they sometimes shade in to one another. I agree, and have found that prescription, as an actant, sometimes finds its way into spaces of negotiation, resulting in an interesting tension, which is further probed by my second research question about agentic nonhumans causing paradoxes in innovation sites. On the whole, Murdoch says that spaces of prescription are formalized spaces, which "lay down very specific rules of behavior" for enrolled entities human and nonhuman (364). To illustrate, these networks can be imagined as scripts in that the roles within them are already organized and the expectations of all elements in play are clear (Murdoch 363). Murdoch cites Leigh Star's example of a MacDonald's kitchen as a prescriptive network. Star ordered a sandwich without onions because of allergies, and it took the kitchen 45 minutes to prepare. She concluded that the MacDonald's network is so prescriptive with its actants that she disrupted the network when she enrolled a negotiation (Star; Murdoch 363).

On the contrary, spaces of negotiation are fluid, flexible, and dynamic (Murdoch 362). Because, in these spaces, "intermediaries are provisional and divergent" it is difficult to establish standards and replicate norms (Murdoch 362). Their programs of action change depending upon the consistency of the network and which actants are enrolled, and alternative networks can emerge because of the agency of actants. By this definition, innovation spaces are largely negotiation sites taut with small attempts of prescription. Most of the actants in innovation site networks strive for chaos while others attempt to exert some control. The end result is the

translation of actants; they change and transform as they are borrowed from one network and moved into another. I employed this distinction to elucidate tension within networks and implications for overcoming it. It also affords me a language to discuss features of networks I've encountered in my research.

Essentially, this sense of ANT helps us understand a physical location like an innovation space by tracing connections to other physical locations and the humans and nonhumans therein even if those other actants aren't present in space or time. ANT asserts that all actants are symmetrically agentive, and that agency transcends a linear progression of time, according to Latour ("Technology is" 113; "We Have Never" 68). This perspective opposes the modernist viewpoint that time flows forward and eliminates all events and actants in its past, but Latour promotes a networked notion of time when even moments are treated as actants that share symmetrical agency with one another ("Technology is" 113; "We Have Never" 68).

Rarely has the ANT notion of symmetrical agency or the alinear progression of time been applied to study a physical workspace; however, there has been one and only one project strictly in the field of PTW that analyzed the materiality of a workspace so far. It is Spinuzzi's 2-year-long study of the phenomena of coworking at nine specially designed coworking spaces ("Working Alone" 400), employing the framework of 4th generation activity theory (4GAT) for data analysis. 4GAT analysis is concerned with multiple activity systems uniting in or around a shared object and (Spinuzzi "Working Alone" 428) the objects, subject, community, tools, divisions of labor, and rules that play a part of that activity system or those united activity systems. Ultimately, in Spinuzzi's article he employs 4GAT to explain how social nonhumans and social organization mediate the social action of coworking (Bryant et al 3). He defines coworking spaces as "open plan office environments in which (professionals) work alongside other

unaffiliated professionals” (Spinuzzi “Working Alone” 399). In attempts to understand who uses co-working spaces, how they are used, and why they are used, Spinuzzi analyzes several spaces as “activity systems” in which social collectives work to transform a problem or raw material into a desired result (Spinuzzi “Working Alone” 403).

Though, offsite innovation centers could be considered “activity systems,” I distinguish them from co-working sites in their purposes and the way they are managed. According to Spinuzzi, co-working spaces cater to a variety of dwellers for multiple complex purposes. Innovation sites, on the other hand, are constructed, designed, and branded as locations where participants collaboratively invent ideas. Most often, companies rent the space to engage in ideation and innovation sessions as opposed to co-working spaces, which are open to the public where they serve a variety of needs as shared work locations.

In addition to the fact, that innovation spaces are distinct from co-working spaces, my analysis of these sites emphasizes their materiality rather than their sociocultural influences. Rhetorically, the focus on the agency of nonhumans is essential in future research for understanding how writing and communicating will occur with the proliferation of ambient technologies. As a result, my methodological and analytical approach will be actor-network theory, which asserts that agency is spread equally across humans and nonhumans rather than activity theory, which insists that human relations are mediated via nonhumans like signs and tools (Miettinen 174).

Though Spinuzzi’s work is the only scholarship implicating ANT in PTW or rhetoric that analyzes a physical workspace, there are three reputable works that view technological innovation through the lens of actor-network theory, and they all exist in the literature of management but touch on important rhetorical themes. Given my focus on emplaced innovation

they are essential precedents to my research. They consider the technology transfer of innovation, (Doheny-Farina; Akrich, Callon, and Latour parts 1 and 2) and the movement of concepts from conception to production and sales through a complex network of actants. In the work, ANT has been proposed as a means for simplifying this complexity and as an ideal alternative to the diffusion model of technology transfer. In the introduction to his book about technology transfer, Doheny-Farina observes, “technological innovations must move through social, organizational, institutional interactions, interpretations, and negotiations” (7). Akrtich et al. illustrates this complexity of innovation in “The key to Success in Innovation” by retroactively analyzing revolutionary innovations such as Apple’s invention of a new super computer reported in *The Soul of a New Machine*. The researchers conclude that there were so many heterogeneous actants involved in the innovation of the computer that engineers were confused about whose idea it was (Akrich, Callon, and Latour part 1194). Akrich, Callon, and Latour say that the complexity is more manageable when researchers reject the lone inventor myth and conceptualize inventors as collectives of heterogeneous humans, tools, nonhumans, policies, and regulations.

Though both Doheny-Farina and Akrich, Callon, and Latour seek to simplify innovation, their approaches differ. Doheny-Farina proposes a rhetorical solution to improving technology transfer: using technical communicators as mediators between the heterogeneous parties involved in the innovation process from the beginning of its process as well as re-centering the end-user as an important element in the innovation (5). Akrich, Callon, and Latour, agree that innovation can be simplified by implicating more actants in the process, but their approach is *interessement*: the strategy of aligning as many parties in the innovation process as possible, which includes both human and nonhuman actants (Callon; Harrison and Laberge 498; Akrich,

Callon, and Latour part 1 194), which is distilled from ANT. Doheny-Farina's rhetorical technology transfer notion does, in some sense, enroll more actants in the process, but the real difference is the status of the nonhuman actant is given equal precedence in each solution, which then helps us conceptualize innovation as a network (Harrison and Laberge 504).

The current rhetoric and PTW scholarship on innovation that employs *interessement* as a new model of innovation as seen above, is concerned with the broad innovation process, the nonlinear movement of idea to production to market (Doheny-Farina; Akrich, Callon, and Latour parts 1 and 2). My research differs from this because it will home-in on a particular phase of the process, what Doheny-Farina calls "the investigation phase" (6) wherein actants are joining forces to generate ideas. This phase is just as complex as it implicated multiple heterogeneous actants. Because it zooms-in on a component of the process, it affords analysis not only of the abstract actants implicated in the process such as corporate culture, social norms of creativity, and corporate hierarchy, but also of the concrete actants enrolled such as furnishings, tools, nonhumans, décor, bodies, spoken words, and sensory actants to help me trace the emergence of concepts. These are all resources that innovators and the directors of innovation spaces seek to mobilize to align interests and identities (Harrison and Laberge 501).

Along with attempting to simplify the complex innovation process, the literature also proposes that the new materialist notions of ANT can overcome the flaws of the diffusion model of innovation. The diffusion model assumes a technological innovation will succeed based on intrinsic properties (Akrich, Callon and Latour Part 2 208) favored by an undefined broad user (Doheny-Farina 5). It is ineffective for both tracing innovations and creating innovations because it relies on a continuous flow between all end-users and all innovators when the "similarity of situations and judgements" is very rare (Akrich, Callon, and Latour 2 208). Akrich, Callon, and

Latour's solution is the idea of *interessement*, or the "whirlwind model" (Part 2 213), aligning as many actants, human and nonhuman, as possible to establish durability in a nonlinear loop (Akrich, Callon, and Latour part 2 213). They illustrate with the fable of the creation of the Post-It note. The Post-It note's inventor was in his church choir and kept on losing his place in the music, so he wanted a kind of paper that was sticky enough to stay on the music sheet but not so sticky that it ripped the page. Because he worked for 3M, he had access to prototyping tools, and though the marketing department insisted there was no market for the idea, he distributed his paper prototype to 3M. The company loved it and demanded more. This is *interessement* in that the inventor and his invention constructed an assemblage of allies into which the product fit, which moved the tool from investigation phase into production (Akrich, Callon, and Latour part 2 211). Those allies are, in a way, constituted by the technological innovation, which determines their roles in the innovation process (Harrison and Laberge 506).

Doheny-Farina agrees that innovators must embrace this complexity to ensure that a product gets to market. He says its main means is communication and that technical writers should fit squarely in that communication to align the viewpoints of all the complex actors involved. Akrich, Callon, and Latour call for *interessement* and Doheny-Farina provides one viable means to establish *interessement* which is communication through technical communicators as well as getting the targeted end-user more involved with the process rather than just telling the end user what you think they want or expecting the end user to just adopt the technology much like the notion of diffusion tells us.

In conclusion, though multiple cross-disciplinary research exists on the creative potential of physical space, few sources acknowledge the materiality of these spaces, focusing more on the human perception of space than on the distributed agency across nonhumans in spaces and their

ability to generate causation. The solution to this anthropocentric approach is in rhetoric research that overcomes the bifurcation between nature and culture by conceiving both realms as symmetrical agentive. On a large scale, this approach is considered material semiotics, and two sub-theories within the approach, ambient rhetoric and ant, are ideal for complicating and expanding on the notion of the creative capacity of space in fitting with my three research questions. My next chapter address these methodologies in some more detail and then outlines the methods I employed for this project.

Chapter 3: Methodology and Research Design

Methodology

The goal of my research is to describe how the material setting of innovation sites shape ideation as agency is symmetrically distributed across human and nonhuman actants in the sites (Latour *Reassembling*; Latour *Pandora's Hope* 230-231 Rickert 24-25). My research questions probe how innovation site directors enroll nonhumans to persuade innovation session participants to be creative; how innovation participants engage symmetrically with nonhumans during ideation; and whether nonhumans themselves enacts antiprograms (Latour "Technology is" 109; Latour "The Berlin Key" 104) that compete with the programs initiated by the facilitators and/or site designers. This chapter restates those research questions and justifies a qualitative exploratory research approach to answer them. It then details the frameworks I employed in this research as part of my methodology from which I distilled my units of analysis. Those frameworks include actor-network theory (Latour), ambient rhetoric theory (Rickert), and the componential framework of creativity (Amabile). The eight research sights will then be described along with the ethical considerations in light of limitations of some of the sites. The section after that elaborates on my data collection methods of observation, ambient description, and interviewing. To conclude, I explain how I distilled my coding from the theoretical frameworks.

Research Questions

1. What programs of action do innovation site facilitators, designers, and directors pursue, and how do they enroll material nonhumans (tools, objects, technologies, ambiances) to embody their values of innovation and enact those values upon participants within innovation sites (Latour "Where are" 166)?

2. Given Latour's principle of general symmetry, what might analyzing innovation sites as actant-networks reveal about how innovators engage with nonhumans while they're ideating? How is symmetrical agency distributed across human actants and material actants during idea generation?
3. While innovation site facilitators attempt to enforce their programs of actions, in what ways might material nonhumans in the space also enforce antiprograms that are limiting, unethical, or detrimental to innovation without participants noticing? How might participants be oppressed by the withdrawn agency of nonhumans or the ideologies they embody within innovation spaces? (Harman "An Outline" 194; Bryant 26; Rickert 168; Bogost "Object-Oriented Rhetoric")

Rationale for Qualitative Exploratory Study

Of particular interest, given my framework of material semiotics, was an approach that could describe how nonhumans shape human behavior and thought and how innovation center designers, directors, and facilitators inscribe their values of creativity in nonhumans. A quantitative approach might measure and predict creativity; however, creativity is difficult to quantify because of multiple units of analysis. Some research measure the creative process; other research measures the creative person, and, still, other research measures the creative product (Simonton "Quantifying" 100). Because of these discrepancies the exploratory nature of my research, quantification of creativity was unnecessary. Alternatively, my questions probed how creativity is constituted from a material semiotics. Qualitative exploratory researched allowed me to "produce a complete, literal description that fully illuminates the intricacies of an experience" (Yin 37; Stake 36). I had hoped that such a description would afford insights into creativity, space, and how human and nonhuman actants employ space to enhance creativity.

A necessary component of description is material setting, or context. This is especially true given the focus of my research questions on the “bounded context” of innovation sites (Miles and Huberman 56). My research focused on innovators innovating within their “natural setting” and the role that setting played in the innovation. The contextual nature of qualitative research is also compatible with my chosen frameworks of material semiotics. Because it acknowledges the symmetry of humans and nonhumans (Latour *Reassembling* 76; Rickert 205), it accounts not only for the physical location of the process, but also for the nonhumans constituting that location as participants that “mediate, transform... enable” the process (Nimmo 109). Rickert, based on the hallmarks of ambient rhetoric and ANT, even expands context to the ecology of sounds, smells, sites, feelings, affects, and social action as material contributions (Rickert 35). I will now elaborate more on each framework in detail, expressing how I plan to use certain commitments within the frameworks for analysis.

Analytical Frameworks

My chosen frameworks within material semiotics were Latour’s ANT and Rickert’s ambient rhetoric methodologies. Both methodologies follow the advice of Coole and Frost to “reopen the issue of matter and once again give material their due in shaping society and circumscribing human prospects” (2), and both have rhetorical implications in PTW. Because of the lack of creativity theories in PTW/rhetoric, I also brokered a framework developed by psychologist turned Harvard business professor Teresa Amabile. The framework is called the “componential framework of organizational innovation” (“A Model of” 123). Amabile’s model is widely cited among social science researchers; however, it is anthropocentric, acknowledging creativity as exclusively the property of the human mind, so I will expand the model to account for materiality as symmetrically agentic to sociality. This section describes each framework I’ll

employ in more detail and explains the units of analysis I gleaned from each to study innovation sites as materially-rich rhetorical places.

Actor-Network Theory (ANT)

Bruno Latour developed ANT to alter scholarly understanding of the social. Both modern and post-modern scholarship, he argues, suffers from a bifurcation between nature and culture, subject and object, and human and nonhuman as a product of modernist thinking. ANT, as a corrective, asserts that the influence of the social cannot be separated from the natural and that the influence of nonhumans cannot be separated from people (Latour *Reassembling* 130). Latour, instead, argues that the social be conceptualized as collectives or networks in which agency is symmetrically equal to humans and nonhumans (Latour 24). This notion informed my first and second research question. It also helped me determine the data I gathered in observing humans interacting with nonhumans in ideation, and it helped me analyze how both realms are, in fact, forming these complex actor-networks that integrate materiality and sociality. This is a starting foundation for my approach, but I expanded the scope of ANT as well because Latour tells us that his original notion of network is “a concept not a thing out there,” (Latour *Reassembling* 131). In my approach to this project, though, I conceptualize network as a thing that is emplaced in innovation spaces; therefore, in addition to analyzing abstract structures and abstract actors, I also analyzed material actants engaged in material networks with one another.

ANT is both a theory and a methodology, and I used it for both in this research, employing the methodology

In analyzing these site-networks, I employed the methodology Richie Nimmo introduced in “Actor-Network Theory and Methodology.” Nimmo’s approach traces connections between humans and nonhumans to describe causation or agency. If we zoom out on one network until we cannot see the connections between human and nonhumans, the network itself becomes an

actant. At the same time, if we zoom-in on that actant we can trace connections and see it as a network (Nimmo 4). My researched zoomed-in on salient connections of selected innovation spaces to decipher the intricate connections of actants and how innovation sites seek to enroll other actants as well as affiliate with currently existing networks. Heeding Nimmo’s advice for my process, I deciphered these connections by:

- Choosing an actant from where the research will depart
- Exploring and unraveling that actant and the human and nonhuman connections to it
- Describing how ideas emerge as an actant from within the complex interaction of humans and nonhumans during the ideation process emplaced in the innovation space (Nimmo 6, 109).

From these three concepts, and with my research question about general symmetry in mind, I distilled several units of analysis that would help me describe innovation sites as material innovation networks. Though I applied these units of analysis across all sites, three of them—Menlo Center, Venture Wald, and Outlaw Lab— provided the most robust data that revealed how new networks seek to gain affiliation with established, durable networks. The units of analysis, I employed to analyze these three material innovation networks included programs of action, distributed agency, and translation (Latour “Technology Is” 108; Latour *Reassembling the Social* 44; Callon 1). I will now expand on each, justifying their use given my research questions.

Programs of Action

Because networks that consist of enrolled actants are agentive, Latour theorizes, they self-regulate (Spinuzzi “Who Killed” 47) and pursue goals. He calls these goals “programs of action,” which he defines as any actant’s wish translated materially (Latour “Technology is” 106). In other words, the “discourse” of actants can be expressed not only through linguistically

but also materially. Additionally, actants can be either human or nonhuman. My first research question sought to describe how the facilitators and designers of innovation sites enroll nonhumans to enact their values of innovation onto site participants, which is a rhetorical approach in that it involves the communication of the cultural assumptions the facilitators have about innovation.

However, because nonhuman actants practice agency equally to one another, Latour, says antiprograms arise, often without the awareness of innovation facilitators (“Where are the Missing” 169; “The Berlin Key” 11). This can be illustrated through Latour’s example of the hotel innkeeper that I addressed in chapter 2. The innkeeper begins supporting his program of action with a sign asking guests to return their keys; it is one nonhuman actant he enrolls in service of his statement, in order to articulate the “track the manager wishes his customers to follow” (Latour “Technology is” 107). The sign networks with the innkeeper’s words and the other material and linguistic actants he enrolls. However, in the process of translating wishes into material nonhumans, a competing network emerges. The guests may or may not intend to steal the keys, but the affordances of the key as pocket-sized and imitative of the guest’s home or car keys promotes an antiprogram of keys not remaining at the inn. The absent-mindedness of tourists unite with the material key as actant, strengthening this antiprogram. The inn keeper, in response, realizes that one sign makes for a weak network and enrolls additional actants such as metal weights on the keys, more signs, more keys, and more oral notices (Latour “Technology Is” 108). The metal weights disrupt the streamlined materiality of the key, persuading humans not to let the nonhumans remain in their pockets (Latour “Technology Is” 108). Agency proliferates, and it amplifies, so the network better communicates the innkeeper’s wish because it becomes more durable, which, according to Latour is linked to the size of the network and the

number of aligning actants the network enrolls (“Technology Is” 108; Akrich, Callon, and Latour part 2 205). At the same time, the more actants the guest-key network enrolls the more durable it becomes and the more likely it is of achieving its program of action: stolen keys. In response, the more durable the inn-keeper network becomes the more likely it is of attaining its program of action (Latour “Technology Is” 106-107).

This furtive enactment of an antiprogram was an important phenomena when applying ANT methodology to a project that sought to describe the influence of human and nonhumans engaging with one another. In fact, all three research questions implicate programs and antiprograms to varying degrees, whether they be enacted by human actants (question 1), human + nonhuman actants (question 2), or nonhuman actants alone (question 3). Programs and antiprograms helped me explain not only intentional enactment of programs, but also unintentional ones, agency that’s being enacted without human awareness. Many of my main implications actually emerged from observations of networks of agentive nonhumans quietly enacting programs upon innovation site participants as addressed more in chapter 4.

It is important to remember that there is never just one program of action per network but multiple programs in each network and that they are constantly changing depending upon actants being enrolled (Latour “Where are the Missing” 169). In an innovation site, for example, networks form toward the goal of producing idea constellations. At the same time, antiprograms such as distraction emerge supported by nonhumans like cell phones, laptops, and tablets. I will acknowledge the multiple programs of action in the sites in my analysis section. Overall, however, the most salient programs of action for the innovation site directors as well as the innovation spaces were to produce a collection of ideas for new products, process, policies, or solutions to existing problems. My focus is on the production of those ideas rather than what

happens to them after they are originally conceptualized. There is substantial PTW/rhetoric research on technology transfer identifying the emergence of innovation as viable products (see Doheny-Farina; Akrich, Callon, and Latour parts 1 and 2), but my focus is on elucidating the programs of action striving only for initial ideation. The site facilitators all assert that viable ideas emerge from a collection of mediocre or bad ideas. I call these idea constellations, embracing Latour's notion of general symmetry for agency across all actants in a network (Latour *Reassembling* 76; Callon and Latour 348) An idea constellation's power and meaning emerges not from the quality of ideas but from the quantity of ideas, for each idea serves as an actant strengthening the network, making programs of action more attainable (Latour "Technology Is" 110).

Translation

When programs of action compete the one supported by the most multifaceted and durable network eventually overtakes the other, and the "speaker's wish" is attained (Latour "Technology Is" 103). According to Levi Bryant, when the message, or program of action, joins forces with actants in the original network, it becomes something different from the original: a translation (178; Latour "Reassembling" 108; Bryant 282; Callon "Some Elements" 6). Callon says a translation is a process that allows a network to be represented by a single entity so long as that entity has the same interested as the network ("Some Elements" 6). Latour's gun-man illustration is a useful example for explaining translation. He claims that a gun on its own cannot act to achieve the end result of killing someone, but at the same time, a man cannot shoot someone apart from the gun. Translation is the union of the two, the socio-material connection that unites the gun actant and the man actant together as a "gunman" (Latour *Pandora's Hope* 177). The gunman network embodies agency it didn't have when the actants were separate from each other, and the actants also undergo transformations. (Latour *Pandora's Hope* 91; Callon

“Some Elements 6). The hand encircles the grip; a finger rests on the trigger, then pulls. The gun, in response, houses a small explosion, releasing the bullet, and reality is altered not only materially but also, unfortunately, socially and physically. Identifying translation is a practical way to trace actions within networks. Because it is so concrete it proves useful as a unit of analysis for conceptualizing innovation spaces as material networks that align in attempts to generate ideas. Translations were also clues to me that an actant has been enrolled in a network because the actant had been altered from its previous state. For example, when couches were translated into the network of the Menlo Center site they transformed into orange couches in alignment with the Menlo Center’s brand; the couch also became networked with plastic furniture sliders, which were placed under it by the facilitators of the Menlo to make the couches moveable and increase the possibility of collaboration among site participants. I will elaborate on many more translations that actants undergone as they aligned with network programs of action in chapter 4.

Distributed Agency

I chose to incorporate translation in support of my first research question, which sought to determine how humans enroll nonhumans to enact their programs of action. Once an actant is translated into a network it shares agency with the network’s other actants whether they be human or nonhuman (Bennett 445). This unit of analysis, distributed agency, helped me answer my third research question about how humans and nonhumans enter equally into a network to produce solution constellations in innovation spaces. According to Latour, both humans and nonhumans produce differences in the world at their own levels (Bryant 93) by authorizing, affording, encouraging, permitting, suggesting, influencing, blocking, rendering possible, and forbidding (Latour “Reassembling” 72). A dry erase board, for example, persuades writing upon it with affordances like a fresh marker in its holder, a broad writing surface. A piping hot mug of

coffee with a sprig of steam on its surface influences the drinking of it. I don't refer directly to instances of distributed agency throughout my analysis section, but distributed agency was a foundational consideration as I sought to describe the innovation sites as networks in research question 3.

All three of my research questions were inspired by the tenets of ANT that I mentioned above and in my literature review as I conceptualized innovation sites as innovation networks with various programs of action belonging to both humans and nonhumans. Problematically, though Latour is a sociologist of science and not a rhetorician; therefore, his connections between rhetoric and ANT are vague at best. That's why I also employ Rickert's *Ambient Rhetoric* in which he employs these principles of ANT to assert that rhetoric is not just linguistic of symbolic but ambient. Our understanding of rhetoric, he says must "diffuse outward to include the material environment, things, our own embodiment, and a complex understanding of the ecological relationality as participating in rhetorical practices and theorization" (Rickert 3). I will now elaborate on Rickert's material-ecological conceptualization of rhetoric and then explain the units of analysis I distilled from it.

Componential Framework of Creativity

All three of my research questions and the units of analysis that I addresses so far, embodied my two most important interests: the rhetoric of space and the values of innovation creativity. Both Latour and Rickert's frameworks provided me with units of analysis that can help elucidate the rhetoric of space; however, to understand creativity in more detail, I employed a framework from psychology. From it, I distilled additional a third set of units of analysis. My foundational framework for the measurement of innovation came from the "componential framework of organizational innovation" ("A Model of" 123). Amabile says that successful innovation requires domain-relevant skills, creativity-relevant skills, and task motivation

(Amabile, “A Model of” 85). Once these elements are accounted for, according to her, innovation follows a progression of:

- Problem or task presentation
- Preparation
- Response generation
- Response validation
- Outcome

Amabile *Creativity in Context* (95).

Amabile’s creativity framework alone is too anthropocentric to fully inform the answers to my research questions which emphasize the symmetrical agency of nonhumans and humans (Latour; Rickert). Thus my units of analysis emerged from a fusion of material semiotics and this psychological theory of creativity. My first unit of analysis, entangled response generation, explores ideas that emerge from the intersection of human and nonhumans, fitting with research question two. Materially-mediated social facilitation noted how human and nonhuman actants are leveraged to cultivate collaboration, and object-oriented knowledge brokering accounted for when knowledge, creativity, and ideas are “captured” in already-created nonhumans and applied or “brokered” toward new technological innovations (Hargadon and Sutton 159). I will elaborate on these units of analysis now and explained how I applied them to answer my research questions.

Entangled Response Generation

Of the five stages of creativity in Amabile’s framework, the most important for my research questions was “response generation” (Amabile *Creativity in Context* 95), marking the discovery of a nascent idea. Responses are generated whenever a subject identifies possibilities to a posed problem by searching through the available (cognitive) pathways and exploring

features of the environment that are relevant to the task at hand” (Amabile 95). Though Amabile is likely referring to social and cultural environments, this assertion is an opening for a material semiotic analysis of the space. For these next units of analysis, I coupled her notion of creative response with Latour's concept of entanglements, which are intersections of actants where “things depend on humans, things depend on things, and/or humans depend on things” for causation (Hodder 20). This “dialectic of dependence and dependency between humans and things” implicates both cognition on the part of the human and agency on the part of the things (Hodder 20). In my research, these dialectics of dependence occurred, for example, when ideas emerged from the interaction of a person with a dry erase board or the entanglement of a couch and a person sitting on it who wouldn't have conceived of the idea without the couch's agency and potentiality for causation.

Mediated Social Facilitation

Most of the entanglements I witnessed resulted from serendipitous encounter between a human and a nonhuman. Site facilitators often encouraged these encounters through the mediation of nonhumans such as couches that can be pushed into circle, prescriptive pathways leading to gathering places, and nonhuman such as foot that meet physiological needs. The unit of analysis of “mediated social facilitation” identifies and categorizes these attempts on behalf of the innovation site facilitators. It proved useful both for understanding the materiality of ideation as well as the psychological perspective of collaboration because it is the initiation of facilitation through material actants.

Materially Embodied Intrinsic Motivation

While spaces can embody and facilitate collaboration, they also can embody intrinsic motivation, another subunit of innovation based on the componential theory (Amabile 90). Given that Amabile and other psychologists assert the importance of intrinsic motivation for creativity

(90) it would follow that an ambience, an artifact, or a network that fosters intrinsic motivation might generate ideas. But how can intrinsic motivation be encapsulated in a physical environment? ANT is an ideal lens from which to observe this phenomena because it views causation as a product of symmetrical agency between human and nonhuman. Humans engage with nonhumans to intrinsically motivate innovators. Permission to think freely and suggest ideas, for example, was an intrinsic motivator by networks of humans and nonhumans. Psychology tells us that intrinsic motivation produces a perception of freedom from constraints and evaluation, so if the environment can be designed to channel this or if a human can enroll multiple nonhumans to free innovators from constraints those innovators might generate more ideas. Ontologically, some actants within networks that free innovators from constraints could include post-it notes with their easy disposability and dry erase boards with their affordances of temporariness, which influenced innovators to feel safe to generate an abundance of ideas.

Object-oriented Knowledge Brokering

As the previous unit focused on how objects might stimulate creativity for innovation, this next one is interested in how objects “embed” ideas (Hargadon and Sutton 160). This code is derived from Amabile’s assertion that innovation requires domain-relevant skills, or “the set of cognitive pathways for solving a given problem or doing a given task (Amabile *Creativity in Context* 85). According to Amabile, the more expertise one has in a discipline, the more creative he/she/it can be in it. Combining ANT with the componential theory reveals that nonhumans can encapsulate domain-relevant expertise even when the originator of the nonhuman is not physically or temporarily present (Callon “Some Elements” 143; Latour *Pandora’s Hope* 28). Object-oriented knowledge brokering which taps into the expertise encapsulated in nonhumans is a common technique though it has not been articulated as a unit of analysis in past research. Hargadon and Sutton’s article in *The Harvard Business Review* explains how companies like

IDEO stockpile nonhumans so they can harvest its embedded knowledge for new ideas (160).. This leveraging of nonhumans to help generate responses is a form of “knowledge brokering,” or “taking an idea that’s commonplace in one area and moving it to a context where it isn’t common at all” (Hargadon and Sutton 158). This is aligned with both my second and third research questions because they seek to describe how objects join forces with humans for ideation. Because object-oriented knowledge brokering is an expansion of the human mind into an artifact, I sought instances of it in my research and coded it as part of my innovation unit of analysis. After I’ve collected data related to this and the other units of analysis, I coded and categorized the data for relationship and pattern identification.

The units of analysis I addressed above were distilled from three frameworks, Latour’s ANT; Rickert’s ambient rhetoric; and Amabile’s componential theory of creativity. My purpose in employing all of them in data collection and analysis was to answer my three research questions about the roles nonhumans embedded in physical locations play in creative innovation. These physical locations, because they are both fascinating and rhetorically rich, demand some further description as part of understanding how nonhumans constitute them. In the next section, then, I will describe each study site with an emphasis on nonhumans within them and implications about how their ambiances represent values of creativity for innovation.

Ambient Rhetoric

Ambient rhetoric, a material semiotic theory, complicates rhetoric is material, ubiquitous, and encircling. Ambience, according to Rickert, “that which surrounds” (6). His premise is that, because humans and nonhumans are symmetrically agentic, nonhumans are withdrawn from human attention despite playing a formative role in thought, action, and belief (Bryant “The Democracy” 31; Rickert 21; Harman “An Outline”). Latour’s “sleeping police man” illustration exemplifies Rickert’s assertions that material actants are rhetorical (Latour “Where Are the” 166;

Rickert 191; Blair 21. The physical manifestation of the speed bump is “rhetoric in material form” (Latour 167; Rickert 206). The speed bump allies with the linguistic speed limit and the cultural-symbolic presentation of the police officer to embody the authority of law enforcement. If a driver fails to respond to the linguistic and symbolic approaches to enacting this program of action, the bump “speaks” to a car that may cross it as well as to the car’s driver. These rhetorical means (and others that are less salient) persuade the driver to slow down, enforcing one of the network’s original programs of action: getting cars to move at a low controlled speed (Latour “Technology Is;” Latour *Pandora’s Hope* 206). The speed bump is ambient because it is a surrounding nonhuman, and it is rhetorical because it enacts agency, causing a change or constraining a possibility in the world (Rickert 206; Blair 34; Bitzer 8). If the car crosses the bump too quickly, the bump “dialogues” with the car’s undercarriage and transmission on a material level, disabling it. The notion elevates the role of materiality not only as complementary to rhetorical theory but as integral to it (Rickert xiii), conceptualizing context as an agentive participant in invention, persuasion, and social action (Rickert xv).

This element of context is a key difference between ANT and ambient rhetoric because ambient rhetoric is more place oriented. I conceptualized this project as an analysis of a unique physical site, so all three of my research questions are as dependent upon context as much as on social and cultural assumptions of innovation employed through material means. Much like Latour’s policemen translate their desire to slow speeders into a speed bump, innovation center designers translate their programs of action using material nonhumans (Rickert 206; Latour *Pandora’s Hope* 207). My third research question recovered, at least to some extent, the withdrawn physical actants that shape idea generation through Rickert’s theory. According to him, we can salvage agentive nonhumans from withdrawal by perceiving them as rhetorical

(Rickert 4) and able to shape action, ideas, and beliefs based on the material relations from which rhetoric springs (Rickert x). However, these material relations are withdrawn and often enact agency without human awareness. Withdrawal is a part of the ambient rhetoric framework, which I will use as a unit of analysis to get a rhetorical understanding of the artifacts in the physical innovation sites.

Withdrawal

Graham Harman describes withdrawal as “the retainment by an object of a reality in excess of any relation” (Harman *Tool-Being* 40). This unit of analysis will me uncover what nonhumans, ontologically, are *doing* beneath the human awareness of subjects in line with my third research question (Bryant; Harman *Tool-Being*; Heidegger; Rickert). Theorists have posited the following ways of reclaiming nonhumans from withdrawal:

- Consider the nonhumans as nodes in a symmetrically agentic assemblage and trace connections between all actants within it (Latour; Bennett)
- Metaphorize the “inner lives” of objects including how they translate their experiences of other objects in their own terms (Bogost)
- Evaluate nonhumans based on a continuum of bright objects, dim objects, dark objects, and rogue objects (Bryant) based on how withdrawn they are
- Create nonhumans that illustrate the perspectives of objects (Bogost)
- Pose ontological questions about the nonhumans (Harman; L. Bryant; Bogost)
- Analyze materiality rhetorically, attuning to how nonhumans speak, persuade, embody values, express ideologies, and rarefy or empower (Bennet as qtd in Ricker; Rickert 213).

I followed Harman and Rickert’s lead in my research as my analysis posed ontological questions about what I viewed in the spaces. One question asked what possibilities the ontology of an artifact in a context afforded. Another asked about the difference the artifact makes in that

context. Additionally, I coded any notes as “withdrawal” in which humans attempting to innovate were being enacted upon by nonhumans but seemed unaware. This occurred frequently in interviews and observations. For example, during an innovation session at the Menlo Center one innovator wrote on a dry erase board. When the top of the board was full, she moved to the lower part and was soon kneeling to reach it. Beneath her awareness, the board, by virtue of being written-on in the top half, persuaded her body to move. This notion of withdrawal is an important one to my research questions, especially to question three, which seeks to determine programs of action being enforced upon humans by nonhumans without their awareness. Withdrawal is caused by the agency of artifacts affecting humans without their awareness, but this agency is not untraceable, and many of the more experienced professional innovators demonstrated an “attunement” or “wakefulness” to the rhetoricity of their surroundings (Rickert 8), leveraging both humans and nonhumans for ideation. In order to help answer research question three about how these humans engage with nonhumans during ideation, I distilled “attunement” from ambient rhetoric as a unit of analysis.

Attunement/Dwelling

My second unit of analysis within the ambient rhetoric framework, was attunement, the awareness of nonhuman agency within the physical sites (Rickert 7). With implications to how humans and nonhumans join forces for innovation this unit was relevant to my second research question. It also determined how humans can be more aware of the agency of nonhumans, which relates to my third research question. Rickert calls this awareness “wakefulness to ambience” (8). It entails humans being alert to their “dispositions in the world” and how they are embedded in the materiality of a situation. It occurs not just with consciousness but “responsiveness to affectability” or the knowledge that “things make claims on us that help constitute not just the

various kinds of knowledge we produce but also our very ways of being in the world” (Rickert 229).

Study Sites

I chose spaces designed to market, facilitate, and/or cultivate innovation. As I mentioned in chapter 1, such innovation spaces are proliferating on a national scale at an unprecedented rate. Almost all of these spaces and especially the ones I analyzed are rooted in the following business innovation assertions that:

- Physical space cultivates and embodies culture (Fanger)
- Traditional workspaces hinder collaboration because they embody isolation and hierarchy
- Informational systems and spatial systems are the same thing because they both serve people and manage ideas (Lathrop)
- Physical space allows for chance encounters that enhance collaboration (Wabor et al. 4).
- Office space is a strategic tool for growth (Wabor et al 4).
- Space is a communication tool (Baksaas; Wabor et al. 4)

Menlo Center

My most robust data set came from the Menlo Center an innovation site housed in the headquarters of an international bioengineering company. It proved to be the only corporate innovation site where I could observe ideation, describe the site, and interview professional innovators. The ideation session I observed involved junior members of the national sales team sent to the Menlo Center for training in design thinking methodology. The Menlo Center innovation facilitators designed a scenario for the sales team in which they had to reimagine the “senior connection” at senior citizen homes. The session lasted three days and involved collecting field data from local nursing homes, collaborating with a small team to design a new nursing home concept, and then pitching the concept to nursing home directors and managers in

the area. Because of such a robust data set, the majority of my research will come from The Menlo Center, especially when it comes to my research question about how innovators networked with nonhumans in ideation.

I chose the Menlo Center because of its credibility as innovation space of an international corporation. Those who designed The Menlo Center and those who use it are renowned in business for their ideas and frequently speak at other companies and universities such as Stanford's d-school on how to enhance a culture of innovation in the workplace. One member of Global Design, Dan Pietz, has recorded national Ted Talks on a concept he originated for the company's line of kid-friendly MRI scanners. Designed for children's hospitals, Dietz and his design staff created themed scanners that appealed to children. The scanners are marketed as entire rooms that hospitals can purchase from a catalogue. Some of the themes include Pirate Adventure, Cable Car adventure, Submarine Adventure, Jungle Adventure, and Camping Adventure. In the camping adventure room the sterile cylinder where the child lies is painted to look like a sleeping bag. When the scanner is booted up and begins circling the child, the sounds of crickets chirping and wolves howling drown out the mechanistic clicking and whirring of the device so not to scare the patient. These scanners have contributed to the international fame of the Menlo Center's parent company; the Menlo Center is also open to working with universities on innovation, which was another reason I chose it. The department that houses the Menlo Center space hires interns from local art and design schools. With both its credibility as an innovative company and its openness to my project it proved ideal.

The MRI Adventure series products I addressed earlier emerged from the Menlo Center's innovation methodology of "design thinking" (Simon 1; Rowe). The methodology, which focuses on empathizing with users, originated at Stanford's d school and is common in industrial

design. It is innovation giant IDEO's preferred method for problem-solving and ideation where it is used as a process for generating pragmatic solutions to multiple problems across industries (Rowe 3). Its components are "data gathering, prototyping, identifying what works, and starting over again" (Tischler) with an emphasis on empathy and on unrestricted ideation at least in initial stages. The Menlo Center even applies improvisational comedy principles of openness and acceptance to ensure no ideas are rejected. The Menlo Center, in its design, is a material representation of the model of limited restrictions, flattened hierarchy, and human-centered problem solving. In addition to employing the space as a unique meeting site and work center for industrial engineers, the company uses it for corporate training, community service, and ideation sessions open to all employees. As part of the design thinking methodology, each innovation session commences with a question or problem such as "What is the future of engineers?" or "What is the future of the senior connection in assisted living homes in the Midwest?" Lab participants then are led through the multiple phases of design thinking methodology to generate, prototype, and report-out responses to the prompts. The Menlo Center proved an excellent research site as the Global Design staff allowed me to conduct ethnographic interviews, spatial description, and observations of innovation sessions, which they also asked me to participate in.

The site even originated via design thinking principles as the staff designed and built the space with their own budget, taking full responsibility for its construction, which centered on the physical and emotional needs of industrial designers. In creating the Menlo Center, the staff also built an adjacent maker's space, an open lab for engineers from all departments to pursue personal projects and design interests. Pietz told me he once visited the maker's space to see an engineer creating a baby doll that breathed so he could get an accurate reading of how hospital bed sheets moved when pediatric patients were tucked into them. Often the maker's space serves

as a usability lab with its moveable dry erase walls, plastic prototypes of scanners and equipment and even a Styrofoam replica of an MRI bay that the Global Design department created using a 3D printer from Nissan's headquarters.

The Menlo Center's material decor is a tribute to Thomas Edison, the company's exemplar of innovation. This has tremendous implications for notions of branding at innovation sites, which I discuss in the analysis chapter. The site's name comes from Edison's Menlo Park facility in New Jersey where most of his innovations emerged. The Menlo Center walls are decorated with quotes from Edison and a larger-than-life-size photograph of him in his Menlo Park lab.

Many of the participants I worked with from the Menlo Center were facilitators for innovation session, but I also interviewed industrial designers to explore how they engage with material space in their offices and the Menlo Center in ideation. In choosing participants I ensured that they spent at least 50% of their work hours ideating product concept or designs, that they either ideated in the Menlo Center or facilitated training sessions for ideation at the site, and had backgrounds in industrial design. I reported on these designers using pseudonyms to protect them, their company, and their ideas.

Outlaw Lab

The second strongest data-set came from the Outlaw Lab, another proponent of design thinking methodology. Outlaw is an offsite innovation space that caters to startups, smaller companies, organizations, and school districts. Its emphasis on the environment as a component of innovation and its branding as a problem solving space was relevant to my project.

Additionally, the space was designed to foster ideation sessions, and so I was intrigued by the ambience of the space and the nonhumans within it. I also liked that it is much smaller than

Menlo Center and that it targets a different kind of innovator, namely entrepreneurs and small companies.

Co-founders Pete Becker and Tom Price originated Outlaw in 2011 as a physical location in which to facilitate ideation sessions for small companies. Their methods were rooted in design thinking, which Price mastered in engineering and Becker in business administration. The lab responded to what Becker perceived as an aversion to change shared by many corporations. Becker touts change as a pivotal component of innovation, proudly calling himself an “Outlaw” for leaving fortune 500 companies to establish the lab. While most of Outlaw’s clients are component manufacturers headquartered in the Midwest, Becker has an expanding list of education clients like local school districts who use the space for strategic planning sessions, which is what I observed for my research. Becker believes in human-centered design for products and procedures and employs the design thinking methodology known as LUMA, which stands for look (L), understand (U), and make (MA) (Luma Institute). Becker and his colleagues are certified human-centered design facilitators. They leverage their expertise and the Outlaw space to lead strategic planning, ideation, prototyping, and usability sessions. I observed several ideation sessions at Outlaw, conducting ambience descriptions, observations, and interviews with participants involved in ideation.

Dragoman Lab

Targeting even smaller companies and community organizations, the community site of Dragoman Lab helped me determine the role of an innovation space that targets not corporations or companies but neighborhoods. Like Outlaw, the founders of Dragoman, a community innovation space, fled what they considered stifling corporate environments to design this site. With an emphasis on community and cross-disciplinary collaboration for creativity, Dragoman’s

lab and studio are creative spaces open to the Milwaukee community. Dragoman runs a service called “open lab” wherein members from the outside community can engage in discussions about innovation and solutions that would benefit the city. They also run “focused lab,” which is designed for more detailed ideation to solve particular problems. Their newest program is called Islands of Brilliance and is an outreach to kids with autism and their families. Twice per month kids come to Dragoman and create projects based on topics that fascinate them. They can use Dragoman’s space and all of its tools including software like Adobe Pagemaker and In Design. The materiality of the space is ideal for projects like this because it is designed for dynamism and is multiple purpose use. I observed one innovation session at this site; it involved six participants planning an innovation conference. I made participants anonymous for this site because I of my interest in their interactions more than their roles or contributions. I will elaborate on my findings from Dragoman in chapter 4.

InnoNation Lab

My justification for choosing this next lab, InnoNation, was that its facilitators take a comparable approach to Outlaw Labs but that they serve a larger city and larger companies such as Disney, Motorola, Groupon, and Adidas. I also determined from its webpage that its founder, Gary “Solutionman” Lamman, believes that space shapes thinking and that he incorporates the belief into his design even when it comes to colors on the walls and the varieties of chairs available. Space as thinking space is also a main element of the InnoNation’s branding. The page cites several articles about the value of physical space in innovation and features dozens of rotating testimonies from clients about how the space opened their companies to creativity. One participant said, “This unique and stimulating environment really took us away from our everyday professional environment;” another called the space “A brilliant ecosystem for fostering innovation” (InnoNation).

Gary “Solutionman” Lamman’s opened his “innovation ecosystem” space in downtown Chicago in 2014. Founded by Solution People, a third party innovation firm working with companies of all sizes to generate value-added procedures and products, the InnoNation is a repurposed 2,000 square foot facility with spiral staircases, views of the Chicago skyline, brick cubbies for quiet work, and a collection of props that stimulate divergent thinking; they embody Hamman’s belief that cross-disciplinary ideation is essential for valuable ideas. One such prop is a foam chair modeled after a scaled-up version of Michael Jordan’s bare foot.

The space and its artifacts serve multiple innovation purposes. Lamman conducts two to three innovation workshops each month there for business-to-consumer retail companies like Nike and McDonalds. Additionally, he rents his space for ideation sessions or offers to facilitate sessions in the lab. I observed a two-day workshop at this site focused on innovation. As part of the workshop, Lamman challenged the 30 participants— from research and development departments from a variety of companies— to generate new policies for innovation, The session and its participants were invaluable for both observations and interviews of emplaced innovation in action and helped me answer all three research questions.

Brainstorm Shelter

This site was an ideal choice because it was much bigger than the other sites, covering two floors and because much of the marketing material on line touted the philosophy that physical space can enhance creativity. Julie Levins, the marketing director has even posted articles from peer-reviewed psychology journals about space stimulating creativity. When I first contacted Levins, she admired the project as she had a background in interior design and had a hand in several of the design concepts for the site. Levins and her designs for Brainstorm Shelter allowed another viewpoint of how creativity can be stimulated, which I could compare across the other sites whether they be large sites, small sites, corporate sites, or community sites.

Additionally, from pictures online, the Brainstorm Shelter struck me as a busy, complicated, colorful innovation space. Of all the sites, this one seemed most invested in manipulating the space to enhance creativity, so I determined that I could get useful data from both describing the site and from interviewing Levins.

Founded in 2002, Brainstorm Shelter is a 10,000 square feet facility covering 2 ½ floors of a former warehouse in a gentrified neighborhood of bars and restaurants popular among Chicago's millennials. Companies rent the Brainstorm Shelter for focus groups, photo shoots, meetings, and ideation sessions, and its mission is community-focused. The site hosts seminars by community advocates for innovation and offers varied events for children for art appreciation. Levins says Brainstorm Shelter's philosophy is to "disrupt and disorient" common thinking by triggering nostalgia, embracing diversity, and allowing spaces for the participants to roam mentally and physically (Levins). Its materiality embodies these viewpoints with multiple themed rooms named after dances, walls splashed in primary colors, and a menagerie of knick-knacks, antiques, and vintage posters. The space was ideal for a study on the role of the physical environment in creativity because its design was rooted in McCoy and Evans environmental psychology study cited in my literature review. Unfortunately, because of propriety issues, I was unable to ethnographically observe innovation sessions here, but I described and rhetorically analyzed the space and interviewed Levins about her design choices.

Red Ball Marketing

Because my research emphasized innovation itself and not innovation of just a product or process, I pursued at least one site in which to explore the generation of concepts and campaigns: an advertising agency. Not only is Red Ball Marketing reputable in Chicago, but its staff is aware of its material conditions. In fact, one of its creative directors, Sandy Ronson, had a background

in interior design an experience designing the physical retail spaces of companies like Fossil to replicate the values of their brands. Because of Ronson's dedication to space as a means of embodying ideas and because of her willingness to conduct an interview and offer a tour, Red Ball Marketing, was an essential innovation site for my research.

As she did for Fossil, Ronson designed the agency space to communicate Red Ball's brand. Visitors and clients enter on a meandering path meant to tell the story of Red Ball's history as a material journey. It is broken into four main pods each named after a previous address that Red Ball occupied in other places in Chicago. Relentlessly branded, like Menlo Center, the interior walls and hallways are designed to be "seamless," replicating Red Ball's tagline "the seamless advertising agency" (Red Ball). Though Red Ball utilizes cubicles, the walls are short, intended to create "serendipitous encounters" of collaboration "where conversations get started and ideas get hatched" (Radsken). Red Ball also employs common areas using artifacts such as food and drink in hopes of unifying employees in one space and fostering collaboration. The portion of the agency furthest from the door is called "happy hour." With an open concept and an actual bar, the place is supposed to mimic some places in Chicago where the agency staff hangs out after work. I interviewed two participants, Brian Deleest and Sandy Ronson, about their experience innovating. They were both members of creative services. I chose both individuals to provide two perspectives of how concepts can be generated within certain spaces. Deleest spoke to how he creates concepts in his office, and Ronson addressed in great detail how the space of the overall agency stimulates creativity. Both insights were incredibly useful in answering my research question of how the values of innovation and creativity get embodied in the spaces that directors design for professional innovators to use, and

Deleest's insight help me compare innovation in the traditional office setting to innovation in innovation spaces.

Venture Wald

My initial approach analyzed only corporate innovation sites; however, I soon encountered the proprietary obstacles mentioned earlier. Additionally, I wanted a cross-section of large corporate innovation spaces and small community ones to generalize emplaced innovation. Dirk Tech Company's Venture Wald was my second corporate innovation space, and it is comparable in size and approach to Menlo Center. One difference, however, is Dirk Tech's emphasis on computer programming. Therefore, as Menlo Center helped me to determine how tangible products are ideated within innovation spaces, Venture Wald, focused on the collaborative concept generation of computer programs.

Dirk Tech is one of the leading providers of equipment, e-commerce, and service solutions for senior living communities ("Dirk Tech"). For this project, I toured the computer programming sector of the company, which is housed on university campus and occupies two floors. On the second floor a wet bar offers Midwest-brewed beer on tap; a multi-use kitchen near the bar inspires what facilitator Tom Laromi calls "Collisions." Laromi explains that these occur when knowledge workers from diverse departments unite in a common space and collaborate. The center of the space features post-modern furniture of abstract design as well as a shuffleboard table made of reclaimed wood. The space, like many others in my research, has two main purposes: to encourage collisions and to attract fresh high-tech talent. The word collision connotes not intensity, violence, harm but the accidental nature of the encounters; as I addressed above, collisions have also been called "serendipitous encounters" by some of the other literature (Radsken).

The second floor houses computer programmers and their equipment, but even there the walls and furniture are dynamic because work teams are fluid. In any given week, new teams will form with heterogeneous programmers who construct temporary workplaces or hubs. Because most of their work occurs in the virtual space of their computers, the changes in the spatial arrangement of the physical location are used more to demark where teams of programmers are working. They customize these hub spaces with moveable dry erase boards for walls on which they then write the name of the team, the project, or both. The design is based on the latest workplace trend of “hot desking” in the tech industry (Collins). The computer-based nature of Dirk Tech’s work means these knowledge workers don’t have a home base or office but continually adjust their workplace as projects arise and teams form. Unfortunately, I only worked with one participant from Venture Wald, Terry Laromi; he is the director of the innovation space. Laromi collaborates with multiple Milwaukee startups and represents a consortium called Innovation in Milwaukee. His expertise was valuable for answering my foundational questions of what innovation looks like and how agency spreads across humans and nonhumans during ideation. Laromi also designed Venture Wald, which proved useful for me to understand how his cultural values of innovation are embodied in his space. I interviewed him in the space and observed him interacting with interior designers and employees as they added the finishing touches to the space. Because the space was a design in progress it offered an intriguing glimpse into how an innovation space comes together to reach its end purpose of stimulating creativity.

Electech Innovation Center

The last company I research has a different approach than the others I mentioned above, which made it useful for comparison. Even though the site was an innovation space, it does not assume many of the principles of emplaced innovation the others do. The office space is

traditional with cubicles in the middle of a vast room, and the offices of management run along the perimeter. Additionally, the participants in the Electech space were not industrial designers like in the Menlo Center but engineers. They mostly innovated not collaboratively but by retreating to their cubicle spaces and designing technologies based on mathematics, data, and the principles of engineering. I was interested in the hierarchical arrangement of this place and its affect on engineers because most of the other site facilitators assume that open concept, novel innovation spaces are essential for creativity.

I signed a NDA with this final company that I wouldn't reveal its name, so I will refer to the company as Electech, it is a national corporation based in the Midwest that designs and manufactures electrical and power technology for industry. Electech's innovation center, where engineers have the luxury of designing long term projects contains cubicles with short walls as well as an island in the middle of the cubicle walls with a table shaped like a diamond. The table contains multiple hook-ups [through] USB ports that connect to a projection screen, so Electech's engineers can display their computer screens to the rest of the meeting members. Executive offices with glass doors and walls mark the perimeter of the center. I conducted interviews with six of the innovators whom I chose because they approach problem-solving from an engineering perspective rather than through the lens of industrial design or interior design. They prefer to work alone in quiet spaces rather than collaborative spaces. They also rely more on mathematics and data than on stimulation from the environment.

Along with sites and participants I addressed above, I researched interior designers unaffiliated with the sites to triangulate how innovators engage with space, how the directors of innovation centers try to persuade innovators to engage with space, and how designers intend for

space to be used. The designers I chose had at least a year of experience in traditional office spaces and new open concept novelty spaces.

Ethics/Reflexivity

Even though my research process posed no physical risks for candidates and few social risks, I sought Institutional Review Board (IRB) approval for each site, which I attained from UWM's IRB on August 13, 2015. The board deemed my research a "minimal risk" to participants, but required that all participants signed [interview consent forms](#) indicating their understanding of my project and that they agree to be a part of it if I anonymize their names and the names of their companies, which I did through the use of pseudonyms for both the first and last names of my participants. For one of the organizations, Electech, I had to sign a [one-way Nondisclosure Agreement \(NDA\)](#) that I wouldn't share information and was permitted only to interview engineers and not observe them; however, I still asked them about how they engage with space when generating ideas. As I worked with participants I allowed them to see my research before I seek publication to ensure I'm not misrepresenting them or their companies.

Research limitations

At all of the above-mentioned sites I wanted to observe ideations sessions, describe the locations where the sessions occurred, and then interview the participants from the sessions. Unfortunately, obstacles arose at each site. I had limited access to proprietary innovation processes in three of the sites. Another limitation was time both on my part and/or the part of the participants. I learned that ideation sessions are often spontaneous. This was the case, for example, with Red Ball Marketing. I traveled there to observe an ideation session, but it was cancelled because the staff needed to focus on a time-sensitive project. Because of time and financial limitations, I didn't visit the center again. I did, nonetheless, gather valuable data from

site description and interviews of professional innovators in Red Ball and even interviewed the Red Ball site's interior designer.

Because I analyzed how space affects creativity across a variety of sites, these limitations didn't affect the answers to my research questions, nor did they hinder my results. Qualitative research, according to Creswell, explores, "the general, complex set of factors surrounding the central phenomenon and present the broad, varied perspectives or meanings that participants hold" (Ch. 7). Each site exposed me to rich collections of study participants all of whom are. Each group offered a different perspective on the role of material space in innovation. According to Yin this use of multiple sources is vital for qualitative research because it allows the investigator to "address a broader range of historical and behavioral issues" (115). This broader range fosters "converging lines of inquiry" in the research and enhances the credibility of my results (Yin 115).

Qualitative research proved a useful methodology to accommodate these perspectives because of its flexibility, which allowed me to make adjustments to overcome these limitations. Instead of researching five sites and employing all three methods at each, I increased to eight sites (which I will list in the next section) and collected data from all eight. In some of them, I only conducted interviews (Electech, Red Ball Marketing). In others, I did only descriptions (Venture Wald, Brainstorm Shelter). However, in four sites— Menlo Center, Outlaw Lab, Dragoman, and InnoNation— I employed some combination of these three methods. The chart below, elaborates on sites and methods:

Observation, interview, and spatial description	Interviews and spatial description only
Menlo Center	Brainstorm Shelter
Outlaw Lab	Red Ball Marketing
InnoNation Lab	Dirk Tech Venture Wald
Dragoman Lab	Electech Innovation Center

In the next section, I describe each of these sites and elaborate on the research I employed within each along with rationalizing why these sites worked or didn't depending on my research questions.

Data Collection

As I addressed in the “study sites” section, I incorporated three data collection methods: observation, ambience description based on spatial analysis, and interviewing. As mentioned in my limitations section, I, unfortunately, couldn't apply the three methods equally across all of the study sites; however, I gathered enough data in each site to cross-reference the information and form a coherent picture of how innovation space designers employ nonhuman actants to embody values of innovation. I also used the data to describe how human and nonhuman actants distribute agency across a network during ideation and to analyze antiprograms initiated by nonhuman actants that may disrupt the programs of humans. Below, I address each data-collection method and justify my choices based on what each method revealed about my three research questions. I start with observations, followed by ambience description. I conclude with interviews.

Observations

In the tradition of material semiotic analysis, my second research question assumes nonhuman actants are withdrawn below human awareness (Harman; Bryant; Bogost; Rickert). Therefore, to elucidate the role nonhumans play in shaping the actions and behaviors of

professional innovators, I used direct observation to bring “nonhumans to presence” (Harman *Tool-Being* 37; Rickert 212) in the ideation process. According to Richie Nimmo, observations as part of ANT methodology remove actants from withdrawal by elucidating connections between humans and nonhumans, describing the interaction occurring at the intersections, and then allowing for analysis of the results of those interactions (109). Spradley’s methodology of direct observation proved most helpful for this task because it allowed me to note patterns of observation which included actors in the setting, behaviors carried out by the actors, space they occupy, the objects in the space, the time of observation, the goals of the actors, and the emotions that seem to be occurring within the actors (Ch. 3) with minimal interference on my part. I brought nonhumans to presence not through focusing on my perception of how nonhumans shaped the actions and thoughts of humans but on tracing their connections by focusing on how the presence of the nonhumans caused certain responses in the humans. This was an especially useful affordance for my third research question, which focused on how innovation occurs in real time in innovation spaces. To trace these connections I hybridized and intersected Spradley’s approach with ANT methodology, which is ideal for analyzing social relations not in isolation but as always existing in networks between human actants and nonhuman actants (Nimmo 109).

Ambience Descriptions

Observation afforded a, relatively, objective perspective of how nonhumans shape the thinking and acting of humans during ideation in fulfillment of my research question about actants employing antiprograms beneath the awareness of human actants. However, my first research question related to how innovation site facilitators enroll material actants to persuade those in the room to think creatively, so I looked for nonhuman actants that were enrolled both on their own and by the innovation site facilitators. Through recording the actants, I observed not

only how they interact with one another and translate each other, but also how they are intended to and actually do form “immersive environments composed of many co-adapting elements” (Rickert 116). Each nonhuman actant in each site represents the “panoply of actions based on the available affordances given possibility in real-time engagement” (Rickert 116).

To identify nonhumans that facilitators used to persuade participants of their innovation values as well as nonhumans that enacted their own agency, I described the ambiances, the surroundings, (Rickert 34) of the Menlo Center, MIL, Dragoman, InnoNation, Brainstorm Shelter, Red Ball, and Venture Wald. The description is part of Yin’s methodology of “direct observation” of the context of the phenomena. Additionally, the description incorporates Yin’s “artifact analysis” in which things provide “insight into cultural features” (102). Practically, ambiance description was also a convenient way to gather data because almost every organization allowed me to sit in their space, observe, and take notes. Ambiance description revealed authentic behaviors as I easily blended in to the background. I usually sat in the back of the room and logged and described all of the material elements of the space, which I analyzed for rhetoricity in relation to other actants later. Some of my interests were furniture, decorations, colors, lighting, fixtures, utensils, writing supplies, technologies, scrap paper, dry erase boards, notebooks, easels, windows, and chalkboards. Because of the networked nature of ambiances and the tendency of nonhumans to withdraw below human awareness (Bryant 37), I also used ambiance description to describe overlooked actants that shape human movement and thinking without their awareness such as smell, taste, and sound. Along with these material nonhumans, I documented linguistic and symbolic texts related to research question two and its interest in the dynamic interaction of material and linguistic actants.

Interviews

To determine how human actants consciously interact with ambience, question two's objective, I interviewed 20 professional innovators including advertising creative service directors, engineers, industrial designers, and interior designers. I also wanted to gauge interviewees' awareness of how they employ nonhuman actants to enforce programs of action. Not every interviewee was from the sites I researched, however. Answering research question one— about the programs of action of designers and facilitators—required interviews with professional designers about their innovation site design experience and not their work contexts; however, I synthesized their answers with my observations of innovators engaging with their environments during ideation. This helped answer questions one and two, and the professionals' opinions about their awareness of space helped me triangulate the findings from my other methods. Because of my emphasis on awareness, I chose the Spradely-McCurdey methodology for ethnographic interviewing; it emphasizes the interviewees' knowledge, seeks evidence of cultural knowledge through symbols like words and verbal cues, and systematizes methodology for novices and experts (37).

I designed two sets of questions. One targeted professional innovators and the innovation site facilitators in Menlo Center, Outlaw Lab, Dragoman, InnoNation, Brainstorm Shelter, Red Ball Marketing, Venture Wald, and Electech. The professional innovators' set included 10 questions designed to describe and assess:

- Their roles as innovators in their companies
- Their personal experiences engaging material setting and nonhumans while generating concepts for projects

- Their viewpoints on the role of material context as a participant to innovation and not just a backdrop
- Their awareness of material space while ideating

The second set of questions were for interior designers from two Milwaukee firms. Those questions were as follows:

- Their roles as designers of innovation spaces in their companies
- The philosophies of design for effective innovation that they employ from their own experiences
- Their viewpoints on the nonhumans that contribute most effectively to innovation and how the nonhumans are arranged in physical space
- Their ideas about how companies, managers, and site designers can enroll nonhuman actants in support of their programs of action (creating a culture of innovation, aligning themselves with an already-existing creative network, generating abundant idea constellations, etc.).
- Their opinions about workspace design trends for collaboration

I compared those findings with what I observed in ideation sessions at GE Healthcare, Outlaw, and Dragoman. Since one element of ambient rhetoric is “attunement,” (Rickert 8), another purpose of these interviews was to determine to what extent professional innovators are “wakeful to ambience” or aware of how the distributed agency of humans and nonhumans within a space are shaping their ideation (Rickert 8). This interest is epitomized in research question three.

Coding the Data

I employed in vivo coding for pattern analysis of observations, ambience descriptions, and interviews, compiling raw data into a PDF and electronically coding patterns using Nvivo software. My units of analysis, as addressed in the previous section, originated from ANT methodology (Nimmo; McNely, Spinuzzi and Teston; Danke), Rickert's ambient rhetoric, and Amabile's componential theory of communication. I chose the categories based on what I wanted to learn through each research questions, namely how humans enroll nonhumans, how nonhumans enroll humans, and how humans and nonhumans engage together for ideation. I organized my analysis chapter by research question because my goal was to use "explanation building" (Yin 141) to elucidate how emplaced innovation happened whether it was influenced by human actants, material actants, or both.

Overall, I used my material semiotic units of analysis for a nonhuman-centric approach to the rhetorical act of innovation and an qualitative explorative project on how innovators engage with ambience and nonhumans of symmetrical agency in physical locations. With my coding, I sought to identify relationships in how material nonhumans affect innovation both intentionally and unintentionally, creating a narrative description of ideation within physical space.

Chapter 4: Analysis of Study Findings

This chapter elaborates on findings from my research questions, which I restate at the beginning of each section. The first section, in response to question one, explains innovation site facilitators' most salient programs of action and describes how the facilitators enroll actants in support of those programs. Rhetorically, this refers to innovation facilitators employing nonhumans to communicate their values of innovation to site participants much like a speaker or writer might use symbols or words (Latour "Technology is" 107; Ackerman 85). The second part of the chapter identifies the antiprograms that of other actants that defy the facilitators' programs. It also explains the clashes, paradoxes, and tension this defiance creates within innovation sites. The third section, informed by research question three, seeks a balance between the programs of facilitators and the programs of nonhumans by describing how human actants join forces with nonhuman actants in innovation sites for ideation. Throughout all of the chapters, ideation is presented as a rhetorical process involving the invention of ideas, the conveyance of those ideas, and the expression of human values through linguistic and material signs.

Humans Enrolling Nonhumans

What programs of action do innovation site facilitators, designers, and directors pursue, and how do they enroll material nonhumans (tools, objects, technologies, ambience) to embody their values of innovation and enact those values upon participants within innovation sites (Latour "Where are" 166)?

This question reflects my interest in the programs of action innovation site facilitators initiate, which are based on their cultural values of innovation. Latour says an actant's program of action is the "track that he/she/it wishes his listeners will follow" (Latour "Technology Is" 107), which is similar to what Bitzer calls "the aim of the pursuit" (4). As addressed in the research methodology section in chapter three, all programs of action begin with imperative statements, a linguistic representation of a track that a speaker wishes his listener to take (Latour "Technology is" 107). These statements can appear as linguistic inscriptions on a material like a

piece of paper, as material inscriptions, or as ideas yet to be conveyed (Latour “Technology is” 105). The effectiveness of the artifacts used to guide listeners down the speaker’s ideal track depends on what the listeners do with the statement. To ensure that the listeners don’t warp the statement, the speaker can load his statement with linguistic and material things that enhance its effectiveness (Latour “Technology is” 105). This is a rhetorical process because signs are employed toward an end purpose steeped in values, but it is also an expansion of signs into things (Latour “The Berlin Key” 10).

The innovation site facilitators I observed all had or programs of action for enhancing innovation within their physical spaces, and they used multiple nonhumans in pursuit of those goals. I will now address these programs of action which include flattening hierarchy, causing serendipitous collaboration, affiliating innovation site networks with already durable networks, and interesting actants (Callon 9). Sections are organized by programs of action, and in each section I identify nonhumans enrolled in support of the programs.

Flattening Hierarchy

The first program of action was the flattening traditional hierarchy. The facilitators and designers agreed that, to some extent, hierarchical structure in many corporations since the industrial revolution is antithetical to ideation and that innovation requires the “disruption and disorientation” of previous authoritative management styles (Bevins). The assumptions about hierarchy that facilitators agree disrupts creativity in innovation situations included ownership of ideas, perceptions of exclusivity especially related to expertise, domination of discussion, and a rigid sense of control in meetings dictated by agendas. Because it is a cultural assumption of innovation held by my site facilitators, it is a rhetorical notion related to how facilitators account for “objects, persons, events, relations” and exigence (Bitzer 5). The overcoming of these

assumptions had to be communicated rhetorically and though they could have been expressed linguistically, my focus will be on how they are expressed materially with nonhumans, particularly the furniture that sites enrolled into their material networks.

Kingwell asserts that furniture is for “doing things and for being beautiful, but it is also for instantiating and illuminating certain kinds of political ideas” (173). Several innovation sites flatten hierarchy through the enrollment of what might be called anarchic, permissive furniture. The Menlo Center, for example, enrolls "Love Sac" beanbags in their innovation space. We can get a solid understanding for how a piece of furniture like this rhetorically flattens hierarchy by analyzing it and its interaction with the bodies of innovation session participants, who are, essentially, the audiences of innovation facilitators. Love Sacs free bodily movement rather than restricting movement to what would be appropriate in a hierarchy the way a chair does. Beanbags allow for more possibilities of where eyes can look and where focuses can fall, and the number of positions people can assume within a bean bag, as opposed to a chair, are limited only by the muscle fibers, joints, and ligaments of the body engaging with the beanbag. The body can splay, kneel, sit, lay sideways, cross legs. Beanbags don't materially dictate the speed and velocity it takes to enter them the way a chair does. The beanbag elicits an unruly, anarchic, nonconformist bodily response even sexual in its posture, which ontologically affords rule breaking and nonconformity within the space, defying the limiting conventions of how bodies should move in office spaces and reflecting the rhetorical values of flattened hierarchy. The beanbags in the Menlo afford climbing and/or flopping into. Their malleability and size affords a place for multiple people to sit, leading to a host of other outcomes which include collaborating. Blair says material rhetoric also accounts for how nonhumans interact with other nonhumans (39). The beanbag's malleable form complements and engages with just about any other physical

entity or ambiance. It's stackable. It can be easily slid or even tossed; it, as a piece of furniture, almost completely withdraws into the action the user is enacting upon it, and there are no prescriptions for how it ought to be used, nor taboos for how it ought not to be used. Thus, the material affordances of the Love Sac chair allow body postures that defy hierarchy, which help the innovation facilitators push their programs of flattening hierarchy. The Love Sac is a rhetorical entity here because of the way it shapes and persuades people to be in response to its existence.

Thus, much like the innkeeper in Latour's illustration enrolled the artifact of the heavy bolt on the key to help support his program of action of keeping the key at the hotel, the site facilitator and designer of Menlo, Dan Pietz, enrolled this piece of anarchic furniture to help promote his program of action of flattening hierarchy, which he assumes will lead to more creative ideas. This is rhetorical because Pietz has a value he wishes to convey, and he does so through communication. His chosen form of communication supports the Menlo Center's program of action to flatten hierarchy and encourage individuality; it extends rhetoric beyond "audience, language, image, technique, situation, and the appeals accomplishing persuasive work" and into that which "diffuses outward to include the material environment" consisting of things and embodiment (Rickert 3). Because of the diffusion, the bean bags are enacting rhetoric by "inserting themselves" not just in the attention of the mind, but also in the attention of the body as well (Blair 46).

Dan Pietz believes that the incorporation of beanbags into his innovation site shapes the thinking of his participants, saying "Your mind is far from Excel spreadsheet when you're sitting in a bean bag chair." Pietz here is articulating the distinction between the affordances of spreadsheets, which are regimented, conformist, and hierarchical with the affordances of the

bean bag chair. It is also useful to compare the material affordances of the bean bag chair with the material affordances of the traditional office chair. Counter to Love Sacs, a chair keeps the body transfixed in a respectful position of attention. The backing of the chair guides the face in one direction, allowing for the eyes to look in only limited peripheral directions. The back is kept straight; it persuades its user to put both feet on the ground. Ontologically, chairs are the ultimate conformist actants. Take a group of 30 individuals in culture, physical appearance, and gesticulations and place them on 30 chairs; suddenly, they all conform. They all are looking in whatever direction the chair is persuading them to look, limiting bodily movement and insisting that bodies remain upright and focused. Furthermore, as these 30 chairs are lined up together, and enact on and with each other, they create an entire line of conformity, an entire collection of human bodies being enacted upon. Based on the direction a group of chairs make a group of people look, chairs rhetorically constitute zones of agency and authority that can be inhabited by whomever enters that space. They have rhetorical force because they ascribe ethos to certain actants within the space depending upon who they are pointing toward. In the case of a line of chairs facing one direction in an innovation site, it reaffirms hierarchy, potentially limiting creativity. The creative director of Red Ball Marketing, in fact, claims chairs are so detrimental to creativity that she forbids them from brainstorming rooms. She believes they “do not allow for the kind of interaction (I’m) looking for” (Ronson). This shaping of interaction and how communication is going to happen within a physical space is rhetorical because it is based on values of innovation and it is communicated to other people.

Another rhetorical move related to the material structure of space is to overcome constraints that certain materials afford, especially if those constraints exercise a hierarchy over session participants. Both the InnoNation and Venture Wald respond to the limiting affordances

of the chair by enrolling chairs that at least appear anarchic even if they don't necessarily persuade anarchic bodily movement. This is all a rhetorical move of managing the impression the audience has of the chair and, by extension, the space. The Venture Wald's florescent orange chairs, for example, look rebellious, but they are conformist in their affordances of encouraging bodies to sit straight up and focus in one direction as are Brainstorm Shelter's polka dot chairs. This calls to mind the rhetorical difference between anthropocentric site and the rhetoricity of materially. Interestingly, the facilitator of InnoNation enforces his program of action of overcoming hierarchy by still using chairs but transforming them into novel shapes like Michael Jordan's foot, a high-heeled shoe, a giant foam question mark, and a pouty pair of red foam lips. Ontologically, these chairs persuade bodies to take the same shapes that normal chairs do, but they visually subvert hierarchy with their deformity, which they underwent as a transformation into InnoNation's innovation network. This is a rhetorical move on the part of the director of the InnoNation, Gary Lamman that may not fully reach his program of action. That program of action, again, is to disrupt hierarchical thinking, yet he maintains the semblance of a traditional office space by still including chairs themselves. The chair is richly rhetorical here, communicating hierarchical commitments of chairs materially but purporting to be nonconformist visually.

Lamman's chairs, half free and half constricted, might mark an attempt to establish middle ground in innovation spaces using material nonhumans. Another rhetorical artifact affording middle ground between anarchy and hierarchy is the couch, which at least three of the innovation space facilitators enrolled in support of their programs of action. The meaning of the couch and its purpose, according to material semiotics, derives not from human association but from the assemblage of which it is commonly a part. Couches are constituents of networks like

living rooms, family rooms and recreation rooms. They enforce these networks' programs of action of comfort and hominess by networking with other actants such as televisions, snacks, comfortable clothes, socks, and nearby family members. Hierarchy, at least corporate hierarchy, is not common in these comfort networks; therefore, facilitators like Lamman borrow couches from these networks and enroll them into their site based on the value that "when you're comfortable your brain is comfortable" (Lamman). Lamman appeals to the value of comfort here to induce his participants to certain choices and to justify those choices that they may "be accepted and approved by others" (Perelman and Olbrechts-Tyteca 75); however, he appeals to his values both linguistically and materially.

Lamman uses material rhetoric to convey this cultural value of flattened hierarchy by persuading bodies to act in certain ways; however, as he enrolls materials into his innovation site networks they need to be translated in order to fit with his network's values, goals, and ideas (Callon 3; Latour "Technology Is" 110). The Menlo Center's couches, for example, become bright orange after being enrolled in the Menlo Center innovation site. The color aligns the couches with the identity the Menlo conveys with its branding. Another value of the Menlo Center network is that flattened hierarchy takes equal collaboration opportunities and physical spaces that afford collaboration. This leads to another transformation of the couch: furniture sliders being placed underneath it. The slider has affordances which affirm the Menlo Center's value of collaboration by making circled-up collaboration physically effortless. It is materially rhetorical because its presence allows for a different reality to occur than had the sliders not existed. This reality is not as likely to occur in InnoNation, Brainstorm Shelter, or Venture Wald because the couches in these locations are not networked with the actant of the furniture slider. The movement of couches in these spaces to enhance collaboration could happen, but the

constraint of the weight of the furniture would limit it. This is no different than the constraints which “can be brought to bear upon the audience” that Bitzer identifies in his reflection on the rhetorical situation (6).

However, as it constraints, the couch also affords both linguistically and ontologically. It allows more body motion than the chair though not as much as the beanbag. Its rules for movement and positioning are more lenient without being completely hierarchical; this seems to fit the programs of actions for almost all sites, which attempt to subvert rules but still employ rules such as the rule that they should be ruleless (more on that in section 2). At first, these seem like strictly material affordances. Because the furniture sliders are slippery, the couch can move along the floor easily and because of the way chairs are designed movement is limited in certain ways. However, the incorporation of this furniture and their material characteristics is a rhetorical move because the furniture persuades people to act, move, and behave in accordance with what the innovation facilitators think will produce his/her value of flattened hierarchy. The ontology, the sheer existence of the furniture, shapes the world in a certain way, but it is still rhetorical because, as Rickert says, rhetoric is more than epistemological consideration; it is intimate with the environment in which it emerges, it is beyond human control, and it is entangled with interactions among people, world, and discourse (162).

It is important to note that Rickert is not interested in eliminating a linguistic approach to rhetoric altogether but rather in seeing rhetoric as linked to both the linguistic and the material. In many of the sites, the material of the furniture such as bean bags integrates with the linguistic in order to help the facilitators meet their programs of action of flattening hierarchy. The freeing Love Sac joins force with the language and symbols of the site that encourage the flattening of hierarchy such as a photo of a scowling Edison superimposed on the wall next to the words

"Hell, there are no rules; we're trying to accomplish something" (Menlo Center). When co-facilitator Vidmer read the quote at the introduction of a new ideation session she omitted "hell" and Dan Pietz, her supervisor, teased her into saying it. This exchange itself, though nuanced, is a linguistic flattening of hierarchy. Pietz implies you can swear here contradictorily to professional ethics and courtesy. A quote from Jet Blue's CEO, Latoya Ingram, further affirms the flattened hierarchy. It says "Just beyond crazy is fabulous." Interestingly, in addition to enrolling the actants of Edison and Ingram who can shape the reality of the site via inscriptions that transcend time, culture, and geography, the ideas that these signs signify is rulelessness at least during the initial idea response stage. In addition to the flattening of hierarchy, site facilitators also believed that collaboration is vital in enhancing innovation, and they enroll several material nonhumans in order to pursue this program of action, which I will now address.

Causing Serendipitous Collaboration

The site facilitators agree that collaboration is an ideal condition for ideation, and they foster collaboration through linguistic, physiological/biological, and/or cultural nonhumans. The linguistic means I noticed included instructions, inspirational quotes, videos of innovation exemplars praising collaboration, and research touting teamwork. In the innovation workshop at InnoNation, Gary Lamman spent the first day on a model of collaboration designed to unite "investigators, creators, activators, and evaluators" around common problems (Lamman). Workshop participants chose cards from a pile in front of the space; each card had a descriptive word on it. Participants chose words that representative their personality types out of four possible types. Lamman then instructed them to form teams in which each personality type was represented, leading them through multiple innovation activities. At the conclusion of the exercise, Lamman distributed his "Know Brainer" tool, a heuristic divided into the four domains of thinking types, each domain contained quotes, words, and questions representative of thinking

types. The tool, in essence, became a handheld collaboration session, which I'll address later as an inscription. This employment of language and symbols is rhetorical in the classic sense that it is based on values and helps form discourse communities of common ideas. However, this attends to only a fraction of the rhetoricity of these spaces because it is linguistically mediated and doesn't account for "surrounding, encompassing characteristics" of the emplaced situation of innovation (Rickert 7). More in line with my first research question about programs of action enacted through material nonhumans and Rickert's attempt at a more comprehensive notion of rhetoric is a focus on the material character of rhetoric (Blair 23; Rickert x).

Along with enrolling linguistic actants, facilitators pursue their collaboration programs of action by enrolling nonhumans. These nonhumans work together to constitute situations in which "speakers or writers create rhetorical discourse" (Bitzer 1) complete with constraints and affordances that shape a "fitting response:" communication (Bitzer 10). Terry Laromi of Venture Wald calls these fitting responses "collisions," citing Saul Kaplan's random-collision theory of innovation. Collision, in this context refers to the accidental union of bodies. Across all of the sites, facilitators fostered Collisions either through ontological/material causation, physiological causation, and/or cultural/social causation. The purpose of all three fosters accidental collaboration by uniting heterogeneous actants in a location; the union increases the probability that the actants will achieve "cultural identification" (Perelman and Olbrechts-Tyteca 513) based on common problems and then work together to solve them. One example is the encounter an electrical engineer had with a mechanical engineer at the coffeemaker in the center of the two departments. The mechanical engineer mentioned an odd phenomena he's been noticing in the lab to the electrical engineer whom had seen this situation before and worked with him to solve it. As this example shows, this is a rhetorical technique because it moves people (Burke; Craig

and Muller 104), in this case literally, gaining adherence of minds (Perelman and Olbrechts-Tyteca 14; Blair 46) by first gaining adherence of bodies in the common space.

While there were multiple examples of this materially-cultivated collaboration in the innovation sites, many of the innovators I talked to commended Pixar's innovation site for its ability to generate such collisions. "I give Steve Jobs a lot of credit." Ian Temper of the Menlo Center said, "He intentionally created places where you would have to have some sort of human interaction with everyone in the company." Like Pixar many of the sites I studied incorporate nonhumans that catalyze interaction such as pathways, walls, partitions or flooring patterns that prescribe movement, summoning actants into spaces of "communal participation" (Blair 37) in hopes of spurring serendipitous collaboration. These communal spaces in my innovation sites were often broad circular areas linked by networks of pathways that serve both as a prescriptive guide for movement and a location of convergence. Red Ball's "Happy Hour" space in the back of the building links six meandering pathways, for example. Designer Sandy Ronson intended it as a neutral zone in the building, which could be accessed by diverse routes through the building, replicating the heterogeneity she and her agency value in innovation. "No two people have the same way to get to a destination" said Red Ball's creative services director (Deleest.). Though we often speak of this kind of heterogeneity metaphorically, an ambient approach to rhetoric allows for this statement to be literally true, supporting Rickert's commitment that "language is wedded to the world" (177) as the bodies that meet in Happy Hour all took literal different paths to get there. An analysis of the programs of action employed at Outlaw Lab, too, reveal that language is wedded to the world with its own attempt at guidance and convergence. "Corrals" made of walls of cubed glass stand in the middle of the innovation space, collecting people into one destination and directing them to a common focal point, which, in this case, is a dry erase

board. The corrals, in addition to affirming the Outlaw brand linguistically, move together; they also simultaneously constrict bodies from moving out of the corral, achieving collection as opposed to Red Ball's Happy Hour, which affords more freedom of movement with its openness on all sides. Both of these material means of fostering collaboration demonstrate a complementary adherence of both minds and bodies toward the end purpose of fostering collaboration (Burke; Perelman and Olbrechts-Tyteca 513).

Often locales within innovation sites that ontologically move people toward convergence are made more durable by nonhumans that accommodate physiological needs, so the rhetoricity of the spaces is affective not just linguistic. Nonhumans accommodating physiological need includes food and water as well as the nonhumans that preserve food and water for distribution such as refrigerators and faucets. The water cooler, for example, central to the cultural-material phenomena of "water cooler talk," illustrates both a physiological uniting space as the place where the thing we need to survive exists, and a common cultural space where people engage in discourse to tell stories or share gossip as a result of having been moved by the presence of what we need for survival. Intelligent action, in this case, is emerging from the way the local environment and the body fit into processing loops that take part in who we are and what we do (Rickert 10; Thiele 47), and this intelligent action is the stuff of rhetoric. The water cooler is an artifact of communication, enrolled to shape the thinking and acting of the audience much like the word "converse" is a linguistic artifact with a specific goal and end result. Stratton's research on the rhetorical-material conditions of the Athenian Agora offers examples of the accommodation of physiological needs as part of persuasion: the Doric columns in the square which create shade that persuades people to pool together to escape the sun (Stratton). In a classical rhetoric sense, the shade-dappled zone is a context, a location of collaborative speech

(Bitzer 5), but, in accordance with Rickert, it is also a catalyst integral to the emergence of Greek thought (30). Actually, Greek thought itself has conceptualized the role of material space in communication as the *Chora*, which transformed the “senses of beginning, creation, and invention by placing activities concretely within material environments” and bodily registers (Rickert 45). Material environments like the Athenian agora have shaped thinking for centuries based on their ability to unite people and catalyze conversations. We wouldn’t know what we do had not our intellectual predecessors gathered within the rhetorical contexts of wells, ponds, and rivers; the very nature of the communication obtains its character as rhetorical from the situation that generated the discourse (Bitzer 3).

Wells, ponds, and rivers to unite still exist as catalysts of collaboration, but, according to my findings, in the networks of contemporary workspaces they’ve transformed into kitchens. Usually centralized in innovation spaces, kitchens ensure that potential collaborators’ paths intersect at least once as they progress toward food for breaks. Small plates and finger food laid out on a counter alongside the kitchen ensure repeat visits to the location and a union of bodies within the location. This is rhetorical because site designers and facilitators persuade innovators to certain actions though they do it through sensory rather than linguistic means. Food in the Brainstorm Shelter is hand-made by “Ranch hands,” employees of the space. The space, then, enrolls smell, which is rhetorical in that it “gives space certain texture, folds and extends the subject’s conception of space and time, and activates desire, which then results in the movement toward that which can sate the desire” (Eckstein and Conley 179). From the perspective of the session participants, smell along with the temperature are kairotic. Because both are temporary, participants want to capitalize on the opportune time to have the best, freshest food. The result benefits the site facilitators’ programs of action in that it moves more people into the kitchen

space at the same time. For participants, the fresh food is kairotic in terms of the opportune moment, but for facilitators, the opportune moment because “ambient,” and “dispersed into the material environs” of the kitchen (Rickert 74). The place fosters an opportune moment for collaboration.

Venture Wald, Dragoman, Red Ball, and Electech ascribe to the “caffeinate to innovate” methodology in their leverage of physiological needs to create collisions. As a matter of fact an engineer at Electech, Matt Buds told a story about going to the coffeemaker one day. An engineer from a different department was there getting coffee and a conversation broke out. The engineer expressed to Buds that he was frustrated by a confusing anomaly in the lab. Buds joined him in the lab, observed the phenomena, and then inscribed it into a scientific formula (Latour *Pandora’s Hope* 28) which resulted in a patent. The patent wouldn’t exist had Buds not “collided” with his frustrated coworker at the coffee machine. Aside from coffee as a collision-creator, many sites enroll beer, wine, and mixed drinks, which can cause both social and physical collisions. The enrollment of alcohol enacts the program of action in two ways. First, the location where the alcohol is stored, served, and consumed is a space for collision afforded by the scarcity of alcohol throughout the work space as opposed to the abundance of food and water. This singularity of the space fosters more convergences of innovators looking to indulge in the alcohol while those content with food or coffee can find it elsewhere. Laromi, of Venture Wald, in fact, positions himself on a bar stool near the keg because he knows alcohol persuades people into the area; Laromi, in a way, collaborates with the actants of the space and the booze by placing himself there, which often results in collaboration. As mentioned earlier, Red Ball’s convergence space, tellingly called “Happy Hour,” enacts a bar as well; the bar affords more conversation because its openness links the kitchen dwellers to the happy-hour dwellers.

Symbolically, the bar in Happy Hour also aligns with a strong alcohol network in Red Ball Marketing given that they advertise for several beer clients and have named cubicle pods after bars in the area. This is the case for Dragoman as well, for it carries the Milwaukee Brewing Company's account in its parent advertising agency and displays Milwaukee Brewing packaging on a shelf that runs along the wall. Networking with the ontological affordances of nonhumans, the site facilitators benefit from its physiological ability to free previously inhibited movements, words, and actions that cause exchanges. When drinking alcohol itself, the chemical's interaction with the body affords realities that would not exist if the substance were not networked with the body. Although, to be fair, no participants got drunk during sessions I observed despite Lamman's tongue-in-cheek encouragement to "inebriate to innovate" (Lamman).

This leveraging of physiological needs to enact a program of action of collaboration, at least in my sites, worked because the move transcends the cultural and symbolic limitations communicators are subject to as speakers and writers. Everyone eats. Everyone drinks (water at least). Because the rhetorical purpose is being enacted both linguistically and materially the innovation network becomes stronger, more durable. Furthermore, the enrollment gains durability by linking the material to the sensual and not just the visual. In Latour's vernacular, the scent of the food is another actant employed to load the grammatical imperative "collaborate" ("Technology is" 104). Rickert offers an illustration of this phenomena related to the sense of sound with his insights on cave paintings of Lascaux; the caves were recently discovered to be ambient experiences whose authors leveraged its affordances to produce sounds similar to horses galloping to support the visual representation of horses on the cave walls.

However the sites don't rely only on material nonhumans to support their programs of action of collaboration. Facilitators additionally employ rhetorical techniques that are social and

cultural as well as material such as gamification and music. Spaces fused humans with nonhumans with gathering spaces like Vanture Wald's collision room with its shuffleboard table and Red Ball's Happy Hour with its display of drawings on the wall, which changes monthly. Innovators who don't migrate to such spaces to participate in the contests, are drawn to the spaces as spectators. In another approach, innovation session participants in the Menlo Center and InnoNation are rhetorically compelled to common spaces through the enrollment of music and music players. The Menlo Center's use of the record player is a nod to Edison's phonograph machine, which is part of its branding, and an impactful technique for fostering collaboration. Record players, as opposed to MP3 players, afford convergence by implicating more nonhumans, vinyl disks, colorful sleeves, nostalgic thoughts in the network than MP3 players or computers. Pietz says he once conversed with a site participant who said the player reminded him of his college dorm room. Pietz says this participant was more open to innovation after the encounter (Pietz). Pietz also said the player "makes the collision thing happen" (Pietz). The player and its affiliated nonhumans had a unifying effect on participants getting them physically to one location and focusing their heterogeneous streams of attention to one "adherence of mind" (Burke; Perelman and Olbrechts-Tyteca 12). In one ideation session I observed, four participants upon entering the space converged upon the player for the Beatles' *Sgt. Pepper's Lonely Hearts Club Band*. Lamman of the InnoNation, in one of his sessions, cultivated serendipitous collaboration online before his the session by asking participants to add their favorite songs to his Spotify playlist. He played from the compilation during breaks and emailed participants a link when the session ended. Again, his serendipitous collaboration was more social than material. The Menlo Center actually ontologically drew innovators closer to one another, using the record player as the center point. The records themselves were a kind of social center point as they

spurred on many conversations about nostalgic days in college listening to certain records. Pietz even said he sometimes uses Pandora but doesn't like it because people don't respond to it in the same way they do when they can choose a tangible album. The enrollment of music playing devices and the "ambient music" (Rickert 28) that results from the networking of the music player actants, transforms the way those in the spaces feel, which often ushers them in to more social engagements with their fellow innovators. This confirms Rickert's assertion about ambient music enacting rhetorical power over site dwellers by affecting the way they think (108). In both InnoNation and the Menlo Center, the enrollment of music is a powerful proponent of the program of action because site dwellers actually "listen to the world in a musical way," which roots them firmly in the space materially.

In conclusion, the first program of action innovation facilitators enacted in my research was the generation of serendipitous collaboration. They pursued this program ontologically by employing material designs that united bodies together to create collaboration and appealing to the physiological needs of their participants and creating singular places that met those needs such as kitchens. They also capitalized on culture and sociality to unite these actant, moving their audience toward some kind of action that was in line with the facilitators' values of innovation.

I will now discuss the second program of action: attaining credibility. This credibility aligns with Burkean identification. It is an appeal for affiliation with a social or cultural group (Burke 203). A material semiotic approach, however, focuses not on an identification of a group of people but with the affiliation of an actant-network which includes nonhumans, ideologies, and power structures in addition to people. I will now discuss and describe the attempts at network affiliation utilized by innovation sites and their facilitators.

Affiliating with networks

As part of a second program of action, many of the innovation site facilitators and designers sought to identify themselves with pre-existing durable networks. This kept them from needing to work backwards, building a network from scratch by recruiting allies and then translating them. This might be considered a form of “problematization” which Callon says involves actants seeking to become indispensable to one another (196). Network affiliation is rooted in rhetoric because of its attempt at “identification, commonality, and community” (Burke; Rickert 35) with already powerful innovation networks. In fitting with ANT, though, this identification is “affiliation” because its goal is the convergence of a small, nascent network into a network that consists of more actants and relations and because it is focused on building networks through both human and nonhuman actants. Affiliation proved to be an efficient and effective means of network-building because innovation sites could spend less time creating and enrolling actants and more time acclimating into current networks. The durability they achieved by hooking up with an already-durable network then afforded for more obligatory passage points through which previously unaffiliated actants such as first-time ideation session participants and all of their actants can enter. There were multiple networks that site facilitators and designers wanted to affiliate with as part of their program of action, and I will address those networks next, starting with the attempt to affiliate with innovation exemplar networks.

Affiliation with Innovation Exemplars

A common thread across the sites was attempted affiliation with an innovation exemplar. From an anthropocentric perspective, an innovation exemplar is one person that the innovation site network beatifies as its patron saint of innovation; however, the ANT principle of assemblage maintains that those deemed innovation exemplars are Latourian “things” (Rickert 25; Latour *Pandora’s Hope* 12-13). They are a gathering of heterogeneous social and material

relations (Latour “Why Critique” 234). Famous innovators like Edison are never “solitary handymen” but are rather networks and network builders (Part 2 216), and innovations are never the product of lone inventors working in isolation, but that they constantly need to be discussed and worked and reworked through networks of human beings all with heterogeneous viewpoints (Akrich et. al 208; Doheny 27).

Under the lens of this networked nature of innovation, the facilitators of at least two innovation sites, Menlo Center and InnoNation, seek affiliation with innovator networks because they wanted to be identified with the “ideas, habits, and customs” of the representative innovators (Perelman and Olbrechts-Tyteca 322). The Menlo Center’s exemplar is Thomas Edison who— research by Akrich, Callon, and Latour confirms— was an assemblage (216). His ideas didn’t succeed because they were innovative but because, before discovering electricity, he selected actants whose priorities aligned with what he was about to create (Akrich, Callon, and Latour 215). He pursued many ends that were often contradictory, building integrated systems of things and people out of which concepts emerged rather than inventing product and creating a system for it to fit into later (Hughes 18). Using the press, he relayed the message that electricity was the future. Next, he built a cogent assemblage of scientists as well as experts in mechanics, transmissions, and generators. He linked those human actants with the nonhuman actants of tools, books, scientific research, a library, and his Menlo Park lab and all of the actants within it. Only then did electricity emerge. Because it had so many pre-existing “spokespeople,” it is easily translated into the world, and Edison became known as the founder of electricity (Akrich, Callon, and Latour 217). Edison's assemblage of materials was rhetorical because he used all of the materials to expand the actant network that generated electricity. He was a network-building master; in fact, his electricity network was so durable that it is still enrolling actants, and Edison

is still in the network's center. How is it possible that he still controls the network? Because ANT analysis conceives temporality as networked and alinear, Edison still manipulates the network as it "travels time and space to tie in localized others" (Murdoch 362). In other words, according to ANT, Edison lives. All actants the Edison network enrolls including all of the fixtures and the participants within the Menlo Center are symmetrically agentic to Edison in enhancing the durability of his network. The Menlo Center sought to join a network in which Edison is the center, then, to garner all of these actants that span place and time; this is affiliation. The choice makes sense given that Edison founded the Menlo Center's parent company; this fact serves as yet another "obligatory passage point" (Callon 3) into the Edison-Menlo Center network.

The Menlo Center facilitator and designer, Dan Pietz, attempts this merging into the Edison network by interesting visual, symbolic, and material actants from the Edison network into the Menlo Center network so the Menlo Center network eventually translates into yet another actant in the Edison network. Superimposed on the center's north wall is a 15-foot photograph of Edison. Clothed in a three-piece suit, his hand is in his pocket, he wears a half smile as he poses in the front of his Menlo Park lab and all its scientific miscellany like microscopes, Bunsen burners, and test tubes. As a material and cultural focal point for the Menlo Center, the image and the interrelated Edison nonhumans within it serve as an "immutable mobile," (Callon 6; Latour *Science in Action* 12) where information flows between the Edison network of innovation and the Menlo Center. However, as immutable mobiles do, the Edison photo holds its shape both physically in the image on the wall and relationally because even when the material image of Edison is not present, the actant Edison is a stable network of associations linked to innovation and invention through semiotic relationality (Callon 6). The

Edison image is also stable because the innovation facilitators likely don't need to explain Edison and the image of the lab other than to say that it was taken in Menlo Park, which then, hopefully, forges a relation between the name of the innovation site and the Edison network. However, this relation is linguistic and depends upon the contributions of additional actants such as an innovation facilitator collaborating with words, the photo, and the rhetorical ambience of the site. The relation also needs to survive the complex, deforming nature of a linguistic transaction subject to miscommunication, which was a difficulty related to the classical notion of rhetoric as "the use of language as a symbolic means of inducing cooperation" (Burke 12).. Because of its linguistic nature, this actant, the explanation of the connection between Edison's lab and the innovation site is weaker and must endure translation in order for it to sufficiently linking the Edison network with Menlo Center. The actant involved is "Menlo" which transforms from Menlo Park to Menlo Center in the translation process as it is initiated into the network. In response, Edison's innovation network symmetrically enrolls the title "Menlo Center" into its network and both networks are different after that transformation process.

Observations of nascent networks seeking affiliation with innovation exemplar networks such as Edison also included Gary Lamman's attempt to affiliate his innovation site with the network of Albert Einstein. Lamman, chooses Einstein for a similar reason that Menlo chose Edison because Einstein is networked with invention, ideas, and ingenuity. ANT accounts for the "semiotic relationality" of both Edison and Einstein. Meanings are not determined by mere human association but from the assemblage they were/are a part of. Those assemblages consist of actants like science, lightbulbs, A-bombs, phonographs, test tubes, the theory of relativity, IQ numbers, lab tools, and cultural assumptions of creativity and ingenuity. However, in order for Einstein to be enrolled meaningfully into the InnoNation network, it needs to undergo certain

translations. InnoNation translates Einstein into its network through the enrollment of coffee mugs with pictures of Einstein, dressed in a suit and tie with hair splayed, holding his own mug. The mug reads “I love coffee” on it. The Einstein mug is an actant enrolled into the InnoNation network as a passage point through which the InnoNation network can be affiliated to Einstein’s network of innovation with all of Einstein’s associated actants. Lamman enrolls Einstein in hopes that InnoNation session participants align their interests with this network. The circular flow relation between Einstein on a coffee mug and Einstein being made to look like he likes coffee on that mug, might be an attempt to stabilize a node of Einstein-coffee-creativity, as part of the network. Einstein, through his image, is presented as a coffee drinker though there are limited actants available to confirm that; nonetheless, this is yet another translation InnoNation is using to more smoothly affiliate itself with Einstein and his network via a passage point of coffee, which already exists in networks of creativity, sociality, and intellectualism. Based on founder InnoNation director Gerald Lamman’s campy decorations and clothing, the network doesn’t take itself too seriously. This is further affirmed by the absurdity of the infinite regress of Einstein on a mug talking about a mug while drinking a mug. Lamman could be enrolling these material nonhumans into his network to demystify the unruly band of actants in Einstein’s network which enact an antiprogram with characteristics marked by inaccessibility, esotericism, political divisiveness (because of the A-bomb), an unattainable professorship and IQ and complicated formulas. Lamman seems to preemptively respond to this potential antiprogram by translating the actants from serious to less serious or less accessible to more accessible. This is further evidenced by the enrollment of the famous poster of Einstein sticking his tongue out. In the context of Lamman’s InnoNation, the image is a translation that maintains the stability of Einstein and his network while simultaneously depicting a more juvenile, more irreverent, and

more subversive innovation exemplar. The translation, then, is the product of Einstein being transported from a serious network of math and academics to an irreverent network of flattened hierarchy and playfulness. Callon's work on translation indicates that this translation would work successfully for Lamman to enact his program of action of irreverent, childlike curiosity because the Einstein image remained stable in both the Einstein network and in relating with the other actants Lamman enrolled in his InnoNation.

For both the Menlo Center and the InnoNation, attaining network affiliation is not an easy process. In order to smoothly affiliate with already existing sites, each space needed to smoothly translate actants from their pursued networks into their own networks. Each actant, in the translation process, undergoes a two-way transformation (Callon "Some Elements" 198). This means that as actants from the other networks get enrolled they may not look like they did in their original network. Einstein's façade, for example, gets transformed from a person or a picture in a newspaper to a coffee mug, and his serious demeanor transforms into a less erudite, less inaccessible, and less esoteric figure who is still creative, inventive, and intelligent in line with Lamman's program of action to have fun while thinking and ideation. As a result, the InnoNation network gets an actant that connotes a combination of fun and seriousness, and the Einstein network of which they attained affiliation has some more fun-series actants as well. Lamman successfully uses translation to enact the essence of the Einstein network and his brilliance while still promoting the less serious, less formal elements of his program of action, which is to encourage people to fearlessly pose questions in order to generate innovation solutions.

Overall, the affiliation of innovation sites with the durable networks of innovation exemplars establish "convergence, or the demonstration of agreement as a result of translation"

by enrolling one small network into an already-existing larger and more durable network (Callon “Some Elements” 198). Thus, affiliation with an innovation exemplar is one way facilitators sought to enhance the credibility of their sites. The second durable network that innovation sites strive to be affiliated with are the local communities in which the innovation site is housed, and I will address that network and the facilitators’ attempts to affiliate with it in the next section.

Affiliation with Local Communities

In addition to seeking affiliation with innovation exemplar networks for credibility, the facilitators also pursued a program of action of affiliating their spaces with the communities where the sites reside. As a result the sites actants from the historic, cultural, economic, geographic and social networks of the community, making their networks act as a more “durable whole” (Latour *Reassembling* 72). This is not so different from trying to obtain the “ideas, habits, and customs” (Perelman and Olbrechts-Tyteca 322) that constitute an innovation exemplar network as addressed. The lead facilitator for the Menlo Center affirms that rooting participants to communities helps them to connect to something and feel an importance in what they are doing” (Vidmer). We can see in this quote the facilitators’ desires to embed participants into these networks. Terry Laromi of Venture Wald has a similar vision for linking his site with the community but also has a focus on improving the community itself through this affiliation “Milwaukee in particular” he said “is in flux.” He sees his role as an innovation site designer is to transition Milwaukee through this turbulence towards a new technology-based future while still paying tribute to its manufacturing roots (Laromi). This is Latourian transformation (*Reassembling* 64). When innovation site networks become affiliated with more durable networks they are never the same, but this transformation is symmetrical. The durable networks, too, change as a result of enrolling the innovation site networks and all of the human and nonhuman actants that make up each network (Latour *Reassembling* 64). The resulting network

is strengthened by the fact that all actants within the new network align with each other as they are defined by a “common context” (Burke 20). Most prevalent across the innovation sites I observed were the use of nonhumans in attempts to identify the sites and the session participants with the history of the local community.

The founder of Outlaw embeds his site to the community by enrolling nonhumans that recall Milwaukee’s manufacturing roots “Milwaukee has always been on the forefront of supplying advanced products, services, research and future forward thinking but companies have forgotten this over the last 10-20 years. His use of actants borrowed from Milwaukee’s heritage is the attempt to reacclimatize the site with the community, enhancing its credibility. He translated worn railroad ties from several defunct tracks in the area into braces for the walls in the Outlaw Lab. Rusted steel plates with bolts in them link the joints together, so that the walls form small partitions, affiliating the Outlaw Lab network with the steel train wheels, clattering boxcars, and all other nonhumans that constituted Milwaukee’s successful manufacturing history. Rhetorically, we again see that the language and culture of manufacturing in Milwaukee is embedded in these nonhumans, but, as Latour would say, Decker is “doing words with things” because his wish to affiliate the site with his community is enacted with materials (“The Berlin Key” 18). Decker is not trying to recreate Milwaukee’s heritage but to “indwell” within it, inhabiting its agency and already-prevalent possibility for innovation afforded by Milwaukee’s past (Latour “Technology is” 114; Latour *We Have Never* 72; Rickert 16; Herndl and Licona 135). Another means of affiliation with a local community network involves enrolling artifacts created by local craftsmen such as Outlaw’s moveable white boards and the moveable displays built from reclaimed wood in the Menlo Center. When mounted to the wall, the displays serve as

dry erase boards, but participants can also fold them down and use them as a table with a dry erase surface.

Artifacts of manufacturing were not the only things that facilitators enroll to identify their spaces with their local community. Artifacts of recreation and culture are common as well. The Venture Wald's "collision room," contains a shuffleboard table, kitchen, and bar stocked with locally brewed beers. Laromi installed a massive scoreboard reclaimed from County Stadium where the Milwaukee Brewers played until 2000. Laromi uses it to keep track of shuffleboard scores in weekly tournaments. Near the shuffleboard table stands a bar serving Wisconsin-brewed beers. The top of the bar, weathered and with vertical lines and chevrons, is a repurposed bowling alley floor. Laromi salvaged it from a defunct Milwaukee establishment; it is smooth to the touch and still carries the faint aroma of lane oil and shoe disinfectant. The bowling alley floor is an actant translated from the portion of the Milwaukee-network constituting its bowling heritage. The bowling heritage relates to German immigration in the mid-19th century which brought bowling to Milwaukee as well as the establishment of the American Bowling Congress headquarters in Milwaukee in 1905. (Schmidt 32). After being translated from another network, the floor became an actant not to walk across and roll a ball down but to slide a pint of Milwaukee-brewed beer across or to support a laptop. Thus, its purpose was transformed to align with the Venture Wald's program of action of making Milwaukee's past durable. However, the bowling alley was not completely transformed because it retains its chevrons, brown lines, color, and scent. Those actants mark it a part of the network of Milwaukee's bowling history; however, its repurposing as a bar top in the collision room makes it a part of the Venture Wald. So, interestingly, it exists in three heterogeneous networks at the same time: the bowling alley, the Venture Wald innovation site, and the history of the city of Milwaukee. When human actants

engage with the bar top and learn its stories, the alignments increase as those actants become part of the network as well.

Like the enrollment of actant's from the innovation exemplar networks in the previous section, this attempted linkage of two networks transforms the actants of the bowling alley floor, the railroad ties, and the wood of the artisan-crafted desks through translation (Callon 6; Latour *Reassembling* 108; Latour "Technology is" 114) If this translation is smooth enough as it seems to be in Venture Wald and Outlaw Law the actant links both the community network and the site network, a bigger and new network forms, and its power grows because it then has access to all actants from the durable network (Callon 6). The more actants the innovation sites enroll from these durable networks, the more power the innovation site has to meet its program of action. This not only expands the scope of resources for the innovation site, but it also locates innovation site participants both materially and temporally in their communities. At the same time, the durable network from which the innovation sites translate their actants grows in its durability because it absorbs the innovation site and all of its corresponding actants. Along with attempting to locate site participants within the material networks of their local communities, facilitators sought affiliation with another network: the childhoods of site participants.

Affiliation with Childhood Network

Innovation spaces sought to enhance creativity by affiliating session participants with the playfulness and collaboration of childhood. Menlo Center facilitator Margaret Vidmer says "When people think of when they were kids, they tend to feel happier and less rigid in the way they think and act... they seem to be recalling a past part of their life that made them feel more joyful" (Vidmer). Vidmer's co-facilitator Dan Pietz enacted rhetorical techniques to persuade participants to think of childhood. One memorable childhood-affiliation technique was a design completion called The Marshmallow Challenge (Wujec). Pietz distributed 20 sticks of spaghetti,

one yard of tape, one yard of string, and one marshmallow. For 18 minutes design teams competed for the tallest and longest-lasting structure. Pietz then showed a TED Talk by Tom Wujec describing the challenge and evaluating which kind of teams thrive. Recent graduates of business school, statistically, do the worst. The most adept proved to be recent graduates of kindergarten, constructing both the most interesting and the tallest structures at 25 inches on average (Wujec). In fact, teams of children are only second in the statistics to structural engineering teams. From observations of kids doing the challenge, Wujec speculates that they were successful because they don't jockey for power, and they can envision unlimited possibilities for the design, building successful prototypes along the way (Wujec).

Pietz's attempt at persuasion is linguistic, the lecture in the Ted Talk, and material with the integration of marshmallows, spaghetti noodles, string, tape, carpeting, and the bodies of teammates. The conviction that children invent more effectively than adults is reinforced in every space with the enrollment of these kinds of actants as "obligatory passage points" into the childhood network (Callon 6; Star and Griesemer 389). A material-semiotic approach to this rhetoric reveals that, beyond just reminding participants of the social realm of childhood, the nonhumans that make up the sites enroll participants in a vast network of the things of childhood. (Latour, *Reassembling* 7). Colorful, unorthodox nonhumans are persuasive and agentic, making different realities possible as opposed to if they did not exist at all in the spaces (Blair 34). They transform the facial expressions, demeanors, walking routes, speed of movement, energy levels, and decorum of adult actants into those common to children. One participant noticed the colorful orange chair shaped like a hand upon first entering InnoNation, ran to it, and dove into it like it was a Chuck E Cheese ball pool. Other participants circled him asking if the chair was comfortable and quipping "you're in good hand." This was a situation, an exchange, and a

convening of actants that the hand chair caused. The nonhumans, by their material affordances were allowing for behavior to happen differently, behavior imported from our own childhood networks. As the nonhumans easily manipulate the behavior and attitudes of the innovators, the innovators are also engaging more with their surrounding environment, overcoming inhibitions of what to touch and what not to touch, again transforming their thoughts into the thoughts of children. The environment is malleable for them not just through the use of Play Doh but through the flexibility expressed in the affordances of things like pipe cleaners. This free exploration connotes a kind of ownership and freedom of movement similar to some of the furniture I discussed earlier that links adults to their kid-freedom networks, helping facilitators achieve their programs of action.

Because of the material rhetorical power of such childhood nonhumans, on first glance, the sites were more like kindergarten classrooms than corporate offices with wacky, colorful motifs as opposed to the drab geometrical regimes of traditional offices. Innovation facilitators loaded their programs of action with orange couches, chairs shaped like hands, vintage Ringling Brothers posters, and Speak 'n Spells or 8 balls on every table. Pietz of the Menlo center said “a huge part of (innovation space) design for me is to wake up the right side of their brain through color, sketching, drawing and dreaming” (Pietz). The Menlo Center’s focal piece is a pine box painted brown; it overflows with colorful pipe cleaners, cotton balls, construction paper, crayons, fruit-scented markers, construction paper, paper plates, zebra print duct tape, and post-it notes. Facilitators call it the sandbox, and it once actually contained sand, but the head of maintenance made Pietz get rid of the sand. Undeterred, Pietz glued grains of sand to the bottom of the box. Strewn across the top of every bright yellow table at the Brainstorm Shelter are mini Etch-a-Sketches, polka dot coffee mugs, and pastel cans of Play Doh. Innovators dwelling in the

Venture Wald's "Doc Brown" room can don a virtual reality mask and play a video game when they get tired of shuffleboard. Menlo Center encourages ideation session participants to kick a yellow soccer ball around the space when not using it as a "talking ball" that indicates who is talking and when. The innovation participants I observed at the InnoNation were in luck as Jerry Lamman decided to appear after a break with his purple Solutionsman superhero suit. He also showed us a picture of his son, Solutionsboy, in a purple getup with a cape.

It would be overly epistemological and anthropocentric to claim that innovation facilitators use these nonhumans to remind us of childhood or help us associate their designed environments with childhood. That privileges people above the toys as Latourian things. Instead, material semiotics reveal that the networks generated by these nonhumans and their semiotic relationality are childhood. Latour makes no distinction between time and place (Latour *We Have Never* 32), so the more immersive the sites make their childhood network in the space, the more durable the network becomes and the more it shapes the participants as they affiliate their actions and thoughts with the childhood network.

So far, I've addressed three programs of action that facilitators promote through the enrollment of actants in innovation sites: flattening of hierarchy, generation of serendipitous collaboration, and affiliation with durable networks. Rhetorically, all of these approaches are attempts to align innovation site participants with the facilitators' values of innovation.

However, an opposite approach to affiliation with a network, was what material-semiotics calls "interessement" (Callon "Some Elements;" Callon and Law 613; Latour *Science in Action* 3; Star and Griesmer 388). This is distinct from affiliation because the innovation sites start from scratch, establishing their own set of values and then recruiting potential allies to join

their network in pursuit of those sets of values. I will now address the means by which innovation sites and their facilitators attempted to interesse actants into their networks.

Interesting Actants

Interessement, is the “act of funneling actants into the network to enhance its durability by reframing or remediating the concerns of those actants into narrower passage points into the innovation networks” (Callon “Some Elements” 197; Callon and Law 616; Latour *Science in Action* 1; Star and Griesemer 388). This involved the innovation site facilitators establishing roles related to creativity that could be filled by more actants and initiating strategies to lock these actants into these roles (Callon 196). Branding to communicate values, commitments, missions, and identity was the most common approach I noticed across the innovation spaces, and it was, of course linguistic and symbolic. However, because the sites are material networks of innovation, facilitators also incorporated material branding to interesse actants, and that is what this section will emphasize. The materiality of branding, like the materiality of rhetoric is often overlooked. Rickert’s ambient rhetoric, with its commitment to humans and nonhumans “that surround” expands this linguistic notion of branding into a material one. In analyzing that which surrounds in these sites, I identified interessement via spatial arrangement, material icons, and color.

Interessement through Spatial Arrangement

Carol Blair asserts that architectural details such as spatial arrangement “act(s) upon people” rhetorically (30) by demanding physical actions of them, “encouraging or discouraging (them) to act or move, as well as think, in particular directions. Given that branding is a means of communication to interesse actants, Blair's ideas extend branding beyond the linguistic and into the material branding of spaces. Sandy Ronson, an interior architect I interviewed, is adept at this material communication and applied it to designing the Red Ball Marketing site. Architectural

apparatuses such as light fixtures, curved walls, and winding pathways enmesh the bodies of actants with the material network of the agency. As a brand, Red Ball is “seamless marketing company,” and to persuade clients to adhere to this value, Red Ball integrates seamlessness in its physical design. Winding pathways and circular shapes flow people through the agency space.

As actants move through the building their “journey” (Ronson) aligns with the journey of the company in a means of material storytelling similar to the material storytelling museums integrate, which chronologically moves them through historic events and era. The first stop is Red Ball’s trophy room where panoramic locking glass windows contain silver and gold industry awards. The inaccessibility afforded by the locks enhance the value and scarcity of the nonhumans. The panorama persuades the body to seamlessly circle in response, the eyes not fixating on a single empty wall. This not only materially reinforces the seamlessness of Red Ball’s marketing, but it also persuades actants of the ubiquity of Red Ball’s excellence, enmeshing them in the material middle of it. Out of the trophy room, a pathway prescribes a route through short-walled cubicle clusters, moving bodies through creative work in action with its sounds, sights, and smells. Each cubicle cluster is named after a previous address the company held in Chicago, starting chronologically from the first cluster. The pathway you follow, along with others originating from heterogeneous locations in the space, converge on Happy Hour, which, as I aside before is a materially rhetorical strategy toward collaboration and an interesting attempt at inscribing both a feeling (happy) and a time (hour) into a room. This ontological story-telling generates an experience; it physically, mentally, and emotionally immerses them into the company and its multifaceted network of clients, award-winning campaigns, magazine covers, desks, mock-ups, and creative directors. It is rhetorical because it deals in values and identities, and it shapes thinking. Several innovators I interviewed both at

Red Ball and other innovation sites, acknowledged the importance of this material branding through spatial arrangements, and, interestingly, they pointed to Disney most adept in this. Sandy Ronson expressed admiration for Disney's material storytelling at their theme parks. "They create a space and make you feel a part of it. Even though you know it is not real they still make you think there is a magic in it." Widmer at Menlo Center said Disney does this through "embodying a story," and one of her colleagues who used to work for Disney said that Disney World's designers shrunk the scale of its buildings within the Disney parks to make the "towns" within the park feel further away than they are. Rhetorically, this pulls persuades visitors physically further into the park while also conveying the allusion that the visitors are taller than they really are, which empowers their target market, kids, who usually feel like they are little wherever they go. Blair asserts that these material-spatial arrangements are rhetorical because they encourage movement and, therefore, thinking in different directions and because the spaces would cultivate different "states of affairs" in the absence of these arrangements (Blair 46; Latour *Reassembling* 52).

Interessement through Material Icons

Though analyzing rhetoric based only on its symbolicity results in a partial understanding of social action, symbols were still a part of the branding of each site. Though we are symbol creating and symbol using creatures, (Burke; Perelman and Olbrechts-Tyteca 334) rhetoric can be expanded, as Blair asserts, by also attending to the materiality of the symbols (18; Dickinson). Black painted icons of bucking broncos, for example, canter across several walls in the Outlaw Lab, embodying founder Peter Decker's notion that innovation requires a maverick spirit, someone who rebels from the status quo while also communicating the permanence and opaqueness of the brand with the black paint. Cowboy hats are strewn throughout the space, as well, and Decker wears cowboy boots, which have alingustic clout in branding in their tapping

sound integrated with their look and the durability and quality of leather for their material (Rickert 137; Blair 37). Actants in the innovation space are being interested to assume the priorities and goals of a durable, opaque brand of Outlaw Lab. Dan Pietz, the designer of the Menlo Center, also communicates his branding through the material affordances of painting on the wall; however, instead of using pictures to convey the brand he uses words. Scrawled around the room are “inquire, imagine, ignite, invent, and inspire,” the hallmarks of Menlo Center’s design thinking methodology. Material semiotic analysis of these words, though, reveals that they are not merely linguistic. The font is custom-created by Menlo Center designers to replicate Thomas Edison’s signatures on patents, transforming the words into a thing enacting the Edison brand. The swirls and loops of his signature implicate Edison and his body into the linguistic artifact with quirks, ticks, and idiomatic movements which could never be conveyed merely linguistically, strengthening the branding in the space by making the connection to Edison as a person more direct and more visceral.

Lamman attempts intersement as well; he does so using material symbols in the InnoNation space. His brand logo, a lightbulb, is reproduced in myriad forms throughout the space. The logo brands every inscription they use during innovation sessions and graces their brand-named on the webpage. Materially, oversized lightbulbs dangle from the ceiling. Actual lightbulbs painted white overflow from base of an artificial palm tree in one corner, which Lamman calls the “Creativitree.” Ideation participants snack from the “world’s biggest popcorn bulb” and pose for photographs at the end of the innovation workshop session with lightbulb hats. Like Decker’s symbol of the bucking bronco as painted on the wall, Lamman makes the lightbulbs ontological, transforming them from symbols into nonhumans populating the space. The bulbs thereby accumulate affordances from materials like the elastic bands of the lightbulb

hat, which makes it wearable. The lightbulb hat + human network not only makes different realities possible, like the reality of posing for ridiculous photos with other session participants wearing the same hats, but it also makes tangible InnoNation's brand and its communication of ideation. The actors joining the bulb hat and the human head and all of its corresponding actors align their points of view with the InnoNation network's point of view that lightbulbs mean ideation, and the brand becomes dominant (Latour "Technology is" 129) and more likely to interesse more actants into the network through the dispersal of rhetoric into physical space (Rickert 6).

Similar to Decker and Lamman, Laromi of Venture Wald disperses linguistic rhetoric into his physical space, except his brand is communicated not through the transformation of the iconic into the material but through the movement of the narrative into the material as his branding is rooted in science fiction stories. A Rube Goldberg machine commands the attention of participants upon entering the Doc Brown garage (*Back to the Future*). Wonkatania (*Charlie and the Chocolate Factory*) houses a wax top hat modeled after Willy Wonka's in the David Wolper film. Participants also get to view, handle, and manipulate replica props from James Bond in Q's Lab, and the *Muppet Babies* in the Bunsen Honeydew room. Laromi loads the communication of his brand with material nonhumans that make the ideas the brand communicates more tangible than were they to exist in the mind of the site participants.

The rhetoric of all of the mentioned innovation spaces' brands works here by "dispersing outward into the ambience" of the space (Rickert 8). Overall, the theming is reinforced when the site facilitators make the ephemeral symbols into things, expressing network dominance with just the fact of their existence, the affordances provided by their raw materials, their possibility of reproduction, their interaction with and enactment on other things, and their enactment on people

like the agency they possess to reshape the reality of human behavior (Blair 24-40). Latour puts it most succinctly when he says this: rhetoric is “doing words with things” (Latour “The Berlin Key” 18). Material-linguistic symbols make the interests of innovation sites tangible and concrete, which helps them align with the interests of actants they seek to enroll into the network. For example, an actant entering Outlaw Labs might be more inclined to align with Decker’s belief that innovation requires a rebellious and maverick spirit if Decker loads his “statement” of that belief with Wild West nonhumans such as painting of bucking broncos, cowboy boots, and cowboy hats; the fact that they are tangible and in material space enhances cogency (Latour “Technology is” 103; Rickert 104-105). If the actant’s views align that innovation requires a Wild West spirit and accepts that these nonhumans are of the Wild West, he/she/it is more likely to be interested in the Outlaw Lab network, eventually being transformed into another actant supporting the statement that innovation is linked to the Wild West (Callon “Some Elements” 1). The interessement, in this case, was obtained through loading a statement with material actants (Latour “Technology is” 104). The more material actants, ANT tells us, the more durable the network, for dominance is obtained through quantity not quality of actants. However, because the use of material-symbols such as cowboy hats require thematic connections like the Wild West, which needs to be connected to Decker’s idea of innovation, achieving quantity of actants, and therefore domination in the innovation site network, can be difficult. Innovation sites have responded to this challenge by enrolling not only material things but also characteristics of things: color. I will now address color as a means of interesting actants by enmeshing colors with things in innovation networks.

Interessement through Color

Color is an ephemeral actant; it isn’t material, nor is it semiotic, which is why much of the material-semiotic rhetoric research ignores it. The only exception, perhaps, is Bryant’s

reflection on color as a “substance... not predicated on anything else” (Bryant 72). Rather than being a thing itself or of a thing, color can only be in the thing. The thing could be a red mug or a red t-shirt, and though its material form changes, the color, for the most part, remains consistent. The color becomes the relation that networks the mug and the t-shirt. This unchanging, linking ability of color is beneficial for interesting actants into a network via branding. As Callon says, an essential part of interesting actants into a network is to define a common identity for a set of actants (Callon 6). While this may have been difficult, color accomplishes this by serving as the substance of an identity that can easily adhere to almost all actants that might enroll in the network. For example, the mug and the t-shirt I addressed above are heterogeneous in vast ways and, therefore, unlikely to ally with one another as a network for achieving some common identity. However, they are linked by their color, and they achieve a relationship that way; their associations are traceable (Latour *Reassembling the Social* 159).

Two of the innovation sites I researched employed color as a substance as part of their brand communication to interesse actants. Integrated in the Menlo Center’s innovation network is the color orange, serving as an “obligatory passage point” (Callon 1; Law “Technology, Closure” 112; Star and Griesemer 389) into its brand with its orange couches, orange print on the walls, and “Menlo” in orange scrawled across a picture of Edison. The color orange implicates Edison’s second laboratory, West Orange, which enhances Menlo’s branding using Edison mentioned earlier. An even more compelling use of color for branding occurred at InnoNation. Lamman, the director of InnoNation drives a purple car; the InnoNation’s walls are purple; the pens are purple; Hamman’s shoes are purple; all documents are purple. Hamman even has a robe from a Chinese diplomat. The color? Purple. The background of the webpage is purple, and even the collar of the lapdog that tromps around the space is purple. At the beginning of each

innovation session, Hamman communicates the importance of the color purple by saying that psychology has found that purple generates creativity. Hamman's assertion is a linguistic actant in the network, supporting his program of action to establish identity and meaning in the space. However, ANT acknowledges that network durability lies in semiotic relationality rather than discourse in that all of the elements in the network define and shape one another (Law "Actor-network theory" 7). In other words, the most effective rhetorical move here is not necessarily just in telling participants that purple is a creative color, but in generating semiotic relationality by encircling his participants, who have come there to learn to be creative, with as much purple as possible. The repetition of purple encourages actants to relate InnoNation with purple and purple with creativity and want to immerse themselves in the purple network as part of a shared identity with the space.

In a workshop session with employees from a large healthcare company his interestment worked. Hamman introduced them to InnoNation and its values and explained the prominence of purple. The next day, three participants returned with purple nail polish, enhancing the length and durability of the branding network. Even though purple was translated from the identity of InnoNation to the identity of the actants it remained consistent (Callon 6; Latour *Reassembling* 103). Hamman rewarded the women with a raffle ticket that they deposited into a bucket in hopes of winning a prize, no doubt a purple prize, at the end of the innovation session. This reveals the dominance of the purple network as well as the enrollment of the material ticket to affirm the growth of the network and to, furthermore, expand the purple network even more by enrolling more purple nonhumans to wear. That same day one of the marketing directors from Roche arrived in purple socks and a purple shirt; he was rewarded as well. The network grew, thanks to the seamless translation of the color purple across the various nonhumans. Both the nail polish

incident and the sock incident, likely, were further integrated into Lamman's purple network through the stories he might tell about both later. From a material semiotic perspective, this proved an ingenious way to interesse actants through branding because the actants remain intact ontologically while still expressing their allegiance to the network, so the translation into the network is not tumultuous. The brand can effortlessly enroll cars, walls, shoes, shirts, and dog collars as "spokespeople who can give shape to the project" of expanding the purpleness of the brand (Akrich, Callon, and Latour 215).

In conclusion, companies for years have used branding to interesse actants into their network by aligning outside actants with the goals and priorities of the networks; however that branding has only been analyzed linguistically and symbolically, the analysis of interessement through material branding enhances the scope of rhetoric just as Rickert calls for in ambient rhetoric (Rickert 2) by acknowledging that branding engages not only the mind of potential actants but their material bodies as well (Blair 47).

This concludes the analysis of facilitators' programs of action addressed by my first research question. I addressed these programs and how facilitators use material means to promote their intentions in innovation spaces. I identified the programs of action of flattening of hierarchy, causing serendipitous communication, affiliating with durable networks, and interessement. Latour's notion of programs of action is in line with a traditional understanding of rhetoric as a means of "inducing cooperation in beings" based on a human purpose or intention. However, it expands the means of inducing cooperation beyond the symbolic by claiming and then demonstrating that humans use nonhumans to persuade others just as they use words (Latour "Technology Is;" 106 Latour "The Berlin Key" 10; Rickert; 191). Latour also, like Rickert, asserts that agency is distinct from intentionality and the capacity to produce

consequences (Latour *Reassembling* 43; Blair 20; Rickert 272). The material semiotic rhetoricians break from the traditional rhetoricians in ascribing agency, and by extension, rhetoric to nonhumans as well as to humans. While humans are enacting their programs of action through the use of nonhumans, the nonhumans and networks of nonhumans may be defying those intentions with their agency (Latour *Reassembling* 40; Rickert 272).

This next section, then, focuses on the agency of nonhumans. It will answer my second research question, which probes how agentic nonhumans may be enacting antiprograms in physical innovation spaces that oppose the programs of action of facilitators. This section replicates the organizational pattern from the first; it is organized into the main programs of action I identified of flattening hierarchy, creating serendipitous collaboration, affiliating with durable networks, and interesting actants.

Nonhumans Enacting Agency on Humans

Ontologically, while innovation site facilitators attempt to enforce their programs of actions, are material nonhumans in the space also enforcing antiprograms that are limiting, unethical, or detrimental to innovation without participants noticing? If so, in what ways might participants be oppressed by the withdrawn agency of nonhumans or the ideologies they embody within innovation sites? (Harman "An Outline" 194; Bryant 26; Rickert 168; Bogost "Object-Oriented Rhetoric")

My second research questionE embraces the material semiotic concept of withdrawn nonhumans that often enact agency upon humans without them knowing. In Rickert's expansion of rhetoric in *Ambient Rhetoric* he argues that traditional rhetorical approaches mistakenly assume that "intent equals result," failing to account for "accidental persuasion" which is at odds with human intent (Rickert 35). With this corrective in mind this research question was designed to analyze the programs of actions that nonhumans within these innovation spaces may be furtively enacting upon humans. According to *Technology is Society Made Durable*, other actants defy programs, resulting in different outcomes; this is called an antiprogram, and it is a

natural occurrence from the agency of objects and their assemblages that seek to “annul, destroy, subvert or circumvent” (Rickert 208; Latour *Reassembling* 70; Latour “The Berlin Key” 18).

Resulting from agency employed beneath our awareness, objects withdraw, and their programs of action produce consequences beyond our control (Rickert 208; Bryant 26; Harman 194 “An Outline”; Harman *Tool-Being* 2). The next section, organized by the programs of action I originally mentioned, explains some antiprograms present in innovation sites.

Flattening Hierarchy

The programs of action of enhancing innovation through flattening hierarchy, cultivating serendipitous collaboration, affiliating innovation site networks with durable networks, and interesting actants are subject to antiprograms (Latour “Berlin Key” 13; Latour “Technology Is” 105). For each rhetorical message conveyed through material-linguistic means other messages compete. Again, this occurs largely because the competing actants are withdrawn almost to the point of becoming invisible. However, Rickert, Harman, and Bryant say that we can become more aware of antiprograms enacting upon our programs by being more attuned to those programs (Rickert 21). The innovation sites were fertile battlegrounds. In the crossfire between warring programs of action are additional cultural values affecting creativity enacted mostly by nonhumans who furtively promote their programs on innovators and innovation spaces. The implications for rhetoric and innovation scholarship are that an awareness of antiprograms can help us prevent harmful, unethical, or counterproductive programs of action within innovation sites. The first antiprograms I’ll analyze defy the flattening hierarchy program introduced in the beginning of the chapter; those antiprograms are “bureaucratic residue” and the “paradox of rulelessness.”

Bureaucratic Residue

In all of the sites, especially the corporate ones, dissolution of hierarchy is impossible because the sites are culturally and materially situated within hierarchies. As a result, sites were affected by “bureaucratic residue,” nonhumans saturated with political ideologies of hierarchy that pushed back on the program of action of flattening hierarchy. Langdon Winner’s “technological politics theory” is an ideal lens through which to view this phenomenon. It draws attention to the ways “human ends are powerfully transformed as they are adapted to technical means” (Winner 21). These technical means can take two forms. The first is in “instances in which the design of a technical system becomes a way of settling an issue in the affairs of a community” (Winner 22). For an example, this occurs in the design of the Electech space; engineers for the department work from cubicles in the middle of the space while the administrative offices surrounded the perimeter of the space. This sends a message similar to Foucault’s panopticon and its embodiment of power via surveillance and surrounding that those on the perimeter more privileged and trustworthy and enact more authority over those on the inside of the space (233). The second occurs with “man-made systems that appear to be strongly compatible with particular kinds of political relationships” (Winner 22); an example of this could be the massive, round mahogany desks that only upper-management is allowed to have in their offices for the parent company of the Menlo Center. In fact, Dan Pietz said the parent company policy forbids any non-management employees from having woodgrain furniture. Supporting Pietz, several interior designers I interviewed asserted that desks are power objects, and designers for Fourscore Business Interiors and Ronson at Red Ball agree that real woodgrain represents status as opposed to laminate materials (Nooyen; Ronson). Ronson says “When people use laminate instead of real wood it gives off a manufactured vibe that I absolutely hate.” Wooden power desks obviously carry symbolic weight that is cultural, enacting power and

domination based on perception. Material semiotics, though, would also assert that the symbolic power merges with material power, which ontologically affects the political structures of Menlo Center. Wood is more durable and sturdier than laminate and hence more permanent and monolithic. Its smooth texture with its “sense of earthiness” persuades tactile interaction, and the material shape of certain power desks “prescribe” a way of moving and sitting (Blair 46); the circular front and rectangular back aims the gaze of the actant to one focal point, the manager, while limiting the space the actants have in front of them. The manager, at the same time, is the focal point and still possesses extensive space, rhetorically enacting political viewpoints of power and priority by the approbation of space and priority. Granted, the Menlo Center and its designers have attempted to overcome this material rhetorical assertion by banishing all desks from the Menlo space and enrolling moveable, flexible furniture like the couches, but because the Menlo Center is situated within the company’s larger building, which culturally exists within the bureaucracy, the residue remains. The antiprogram of authority and ownership is being enacted materially here despite the facilitators’ attempts to materially flatten hierarchy.

Electech’s innovation space is another compelling example of a contested network, rich with political technologies of hierarchy warring with values of creativity. Ninety percent of Electech engineers expressed frustration that power is being enacted upon them, limiting their creativity. This appropriation of power has always been a priority of rhetorical analysis, and analyzing it materially illuminates attempts of rarefaction in which specific subjects are limited unless they meet certain conditions of power and identification (Foucault *the Archaeology of* 155). Engineers Adam McCorkle and Matt Buds disparaged upper-management’s safety protocol, which enforces cleanliness by forbidding employees from collecting machine parts, textbooks, and tools on their desks. Buds said the protocol transforms his space into a vacuum,

and McCorkle complained that it stymies his work. “It is not conducive to my thinking because I need dry erase boards, lots of monitors, and computers loaded with the right kind of software” (McCorkle). Buds recently blatantly violated the safety protocol in an attempt to engineer a mechanism with a snap feature because he needed a “big mess” in front of him, asserting that a collection of product parts help him find “alternative ways to think about things” (Buds). Along with the enforcement of the protocol through the policy, the management employs a task force that walks through space warning engineers with messy desks.

Another instance of bureaucratic residue occurred with the Outlaw Lab and it may have been because the facilitator had spent 30 years in the corporate world but left after deciding hierarchy hindered innovation. This founder, Pete Becker, intended Outlaw Lab to free companies from such restrictions by offering a hierarchy-free space in which to ideate and brainstorm; however, he still enrolls nonhumans into the space that embodied hierarchy unintentionally. The site consists of four rooms, one large room in the middle and three classroom-sized rooms along the perimeter. He met with clients for brainstorming and strategic planning in one of the classroom-sized rooms. Materially, the room replicates the traditional boardroom, which makes a host of rhetorical assertions on participants. The chairs, which all face the board, create an authority zone. In materially interacting with one another, the network of chairs, tables, the projector, and technology makes agency both culturally and materially inhabitable (Herndl and Licona 134). Though the boardroom set up is not inherently evil or oppressive, this arrangement is problematic given Decker’s program of action of flattening hierarchy and his values of defying corporate status quo as a “maverick.” (Decker) The space, because of the antiprogram of bureaucracy, confuses actants who expect a flattened hierarchy in their innovation session.

The antiprogram even caused one encounter during an innovation session, which led to a near overthrowing of Outlaw Lab and its methodology through the rhetorical leveraging of the agency afforded in material space. It involved a tech company specializing in educational software and web supplements for the nursing field. Its goal for the facilitation was to identify advertising solutions. Decker started the session by dividing the 20 participants into groups of four. He assigned groups to sketch shareholder maps, visual “inscriptions” of their prospective advertising audience (Callon 143), but after two hours, one of the managers from the tech company walked away from his group members and inhabited the “a-zone.” He snatched a dry erase marker from a volunteer writing ideas for another group and said “we are running out of time. We know what is important already. I want to drill down to particular areas of advertising that we need to do.” Clicking on the board with the marker to draw attention to himself and the a-zone as the staff began throwing out ideas, he prompted the staff with a statement such as “what else?” Essentially, he led his own ideation session, rejecting what Decker and his staff were facilitating. The Outlaw staff clearly was agitated, so Decker asked the participant into a different office where he explained that the Outlaw methodology would eventually delve as deeply as he wanted to but that, for now, they were in the stage of visualizing customers. After this talk, the manager returned to his seat and let Outlaw facilitate as needed.

This was a fascinating rhetorical phenomenon related to space, authority, and hierarchy. The most illuminating rhetorical insight is the way this person practiced an ecological attunement to the environment and its possibilities (Rickert 223). Because the space contained the authority zone as constructed by the arrangement of nonhumans in the room, the manager inhabited it and was imbued with authority as a result (Herndl and Licona 134). The snatching away of the dry erase marker appeared to be a bold power move in which the manager took over

the rarefying position of determining what was a useful idea and what was not (Foucault 158). The useful ideas were inscribed in the board, and the ones he didn't like were passed over, which again is counter to Outlaw Lab's free-flowing ideation methodology. Additionally, he leveraged an affordance of the marker by clicking it against the board, which turned more attention to him, strengthening the authority zone. Indeed this reveals that rhetoric is material, cultural, linguistic, and performative and can be enacted through sensory appeals like sound. Granted, there is no way to know whether the meeting would have gone differently had Outlaw used a different network of actants; however, it does appear that this participant, either intentionally or unintentionally, leveraged the space in a rhetorical move to push his own agenda, an antiprogram to the flattening of hierarchy program Decker tried to attain within the space.

This is the only instance in my research where a site participant had actively overtaken a space, but it does have implications to the complexity and contradictions of hierarchy and the potential results of attempting to eliminate it without actually being able to do so because its elimination is always at the intersection of programs and antiprograms (Latour 107). It also reveals a clash between programs of action in which one program is being undermined by another less salient program. While Decker uses nonhumans to establish a program of rulelessness, the configuration of nonhumans themselves responds with the establishment of bureaucratic rules that the participants leverage. This attempt to eliminate rules in a material and cultural environment that thrives on rules marks a second antiprogram of the space that defies the flattening of hierarchy. I will now address what I call the paradox of rulelessness below.

The Paradox of Rulelessness

The paradox that led to the takeover at Outlaw Lab was perhaps caused by a contradiction between a representation of rulelessness and an unintentional yet lingering rhetorical

commitment to hierarchy. Another form that this bureaucratic residue took in my research was what I call the paradox of rulelessness in which networks purport to not have any rules but still materially and culturally enact rules.

This paradox is best illustrated by contradictions in the Menlo Center. One of the walls of the Menlo Center space contains a quote by Edison reading “Hell, there are no rules; we’re trying to accomplish something here” (Menlo). Menlo enrolls several other nonhumans that network with this quote to push a program of action of no rules such as the Love Sacs and the lenient dress code. However, based on his belief—echoed by other innovation facilitators—that technology hinders collaboration sessions, Dietz prohibits laptops, computers, and phones from the innovation space. He inscribes this rule as a sign, which hangs in the kitchen. It is thin, cardboard, and about two feet by three feet; it reads “Attention, you must be this tall to bring in a laptop.” Next to it is a ruler leading to the ceiling, which is 10 feet at its apex. An arrow points to the highest mark of the ruler, implying that only giants larger than 10-feet can bring technology into the space. This is a material embodiment of Dietz’s rule, but its existence is problematic because it is a rule situated in a space that Dietz purports to be without rules. As designer Ian Temper says, “There are no rules, but there are things that you can’t do.” The result is that the artifact has had to undergo a Latourian translation to intersect these two paradoxical ideologies (Callon 1). Even though the value expressed by the culture is contradicted, the artifact has been transformed to align with the needs, goals, and values of the ruleless network (Callon 1; Akrich, Callon, and Latour part 2 222). Materially, the translation transforms its degrees of durability (Blair 37). As a result of the translation the sign is cardboard, which makes it flimsy and weak and temporary as opposed to the stability and solidification conveyed by a material like granite or bronze (Blair 37). The ruler is made of a highlighted paper and not metal or wood. Blair

would acknowledge that this artifact is not “intended to endure” (37), so the rule is weakened; it materially seems unintended to endure. While the temporary nature of its material conveys leniency in the rule, the words on the paper, reminiscent of a carnival or theme park, convey fun and excitement. As a result, though it is a rule and purports to be unbreakable, its material apparatus and its linguistic rhetoric undermine the seriousness of the rule. This, again, is another example of rhetorical agency as separate from rhetorical intention.

Overall, enacting a program of flattened hierarchy proved impossible for innovation sites. Many facilitators are still enmeshed in hierarchical notions from previous work, attempting to design ruleless sites in a place constituted of rules. As Langdon Winner describes, two networks always exist simultaneously side-by-side; one system is “authoritarian, the other democratic, the first system-centered, immensely powerful... the other man-centered, relatively weak, but resourceful and stable (19). Given this reality, the attempted flattening of hierarchy is fraught and often detrimental to innovation.

The next program of action I’ll address, which I mentioned in the previous section, is the goal of cultivating serendipitous collaboration. Like the goal of flattening hierarchy, this goal is fraught, and an analysis of the antiprograms launched by agentive actants within the site illuminates material and cultural paradoxes related to hierarchy.

Serendipitous Collaboration

The next clash that emerged was in the attempt to cultivate collaboration within the sites. One artifact that all the innovators say enacts an antiprogram against collaboration is the cubicle. Dan Pietz conducts experiments before Menlo Center innovation sessions where participants use pictures from magazines to depict spaces that are the least and most collaborative. “The least collaborative” Pietz says “always pictures cubicles.” Pietz’s colleague in the Menlo center says

that cubicles make people feel like “rats in a cage,” and Ian Temper calls these workspaces “cube farms,” which is slightly more generous than his coworker who calls them “quarantine rooms.” Temper once created a poster for engineer appreciation week featuring a photograph of an office space with rows of cubicles shot from above. The text read “You are not forgotten.” Lamman from the InnoNation coined the term “cubicle creativity,” as he claims he’s found that the breadth of innovators’ creativity is proportional to the physical space in which they work. He says, “If you want employees to think out of the box, don’t put their brains in a box” (Lamman).

Commonly, the sites facilitators’ responses to these isolating, brain-boxing cages was to either eliminate cubicles by using open concept layouts or to shorten cubicle walls in hopes of spurring on serendipitous communication. However, as Bryant says, objects will “do what they do” regardless of human awareness; they are unknowable and indifferent to human activity (Bryant 44; Harman *Tool-Being* 47; Rickert 195) and can often enact unintentional agency. Therefore, nonhumans originally enrolled to overcome cubicle constraints often form networks that persuade innovators to behave antithetically to what facilitators intend (Spinuzzi “Losing by” 456). One common antiprogram enacted by the shortness of cubicle walls is the prevalence of noise and distraction as well as the elimination of privacy, which make innovators feel vulnerable with their ideas.

It is possible that the cubicle hatred expressed by the industrial designers reflects their favored work style of creative collaboration while many innovators in engineering indicated they preferred quiet, introverted thinking. The engineers I interviewed implied that managements’ attempts to cultivate collaboration has undermined their ability to complete their work. One Electech engineer likened the open space of Electech to “working in a bus station” and said it favored collaboration more than introspection about difficult concepts. Management’s value of

collaboration is inscribed into the artifact of the short cubicle walls as it materially persuades the innovators to communicate even if that means overhearing one another. The short cubicle walls did cause a useful serendipitous collaboration at one point when Brian Dahl overheard an engineer from a different department talking about a problem. Dahl joined the discussion because he had a way to solve the problem, and the conversation resulted in a patent. However, from a material rhetoric perspective, the low cubicle walls most often enact harmful antiprograms as they allow for the cacophony of work noise to proliferate, freeing sound waves with limited restraint (Rickert). The program of action clash here is threefold. The engineers would prefer to work introspectively; upper management would prefer that the engineers engage in serendipitous collaboration; and the sound waves would prefer to flourish, filling up every nook and cranny of the space because as Bryant says. As a result, the programs of action compete, all leveraging the nonhumans of the space, and the humans are not in control of the results. The affordances of the short cubicle walls at Electech often causes harmful or alarming behavior that defies facilitators' programs of action of fostering collaboration. At least two Electech engineers said they often worked in their cars because they cannot focus in the innovation space. Another Electech observer noticed that the more introverted of the engineers have slowly migrated toward the fringes of the office space, which actually hinder their ability to engage in serendipitous discussion.

Overall, facilitators' programs of action, fostering collaboration, are often rendered ineffective by antiprograms enacted by the very nonhumans the facilitators enroll. These nonhumans are, as Spinuzzi calls them "runaway objects" enacting unintentional rhetoric that undermine collaboration because they are poorly under anyone's control (Spinuzzi "Losing By" 453).

This concept of runaway objects is also useful in helping us identify clashes within the next program of action, affiliation with durable networks. While the affiliation of a nascent innovation network with a more durable innovation network enhances the ethos of the nascent network, the nascent network is also subject to all actants within the durable network even if those actants pursue a goal that is counter to the original goal of the nascent network. I will now address the downfall of network affiliation, which I refer to as the phenomena of “runaway milieus.”

Affiliation with durable networks

Spaces are crafted partially by humans to communicate and enact programs of action.

The innovation spaces I analyzed were rhetorically crafted by facilitators who sought to promote their program of action of affiliating their sites with already credible innovation networks.

However, a problem with the affiliation of one network to another is that the newly affiliated network is subject not only to the beneficial actants in the network but also to the harmful ones. This is similar to a merger in business when a company inherits another company’s assets along with its liabilities.

Broader contexts have liabilities. This is a rhetorical material milieu problem, and there is precedence in the rhetoric research. Blair addresses the phenomena in her analysis of a NASA space memorial near Disney World, squarely in the “theme park zone” (29). According to her findings, the milieu of the theme park zone enacted agency upon the memorial visitors that encouraged responses rooted in “efficient fun, safe adventure, the anesthetizing sanctification of technology, and the happy ending” (Blair and Neil 49). As a result, those touring the memorial responded with indifference to its importance (Blair and Neil 49). The main message wasn’t

rhetorically conveyed effectively because of an unintentional program of action enforced by actants in the site's larger context.

Like in the case of Blair and Neil's analysis of the memorial, the context the innovation network facilitators are trying to affiliate with sometimes enacts a competing idea upon the smaller context of the site. Also related to Disney, Ronson illustrates this in discussing her frustration of needing to design a Disney story in a mall in her previous career:

They asked us to rethink the concept. One of our biggest barrier was that they were selling a timeshare at a mall. The first thing we did was talk about the consumer journey you're going through that moves you from the mall mindset to the vacation mindset. How could we make them want to stay? How could we make them want to stick around for an hour? How do we transition them in and out of the mindset that the setting is going to create? These disconnects leave you feeling weird (Ronson)

"Weird disconnects" caused by antiprograms enforced by agentic nonhumans abounded in the innovation sites I observed. Temper of the Menlo Center expressed that the need for building security undermines the healthcare company's commitment to making people feel safe, comfortable, and welcomed because its building feels like a "military base where you don't belong" (Temper). "There is a huge irony" said Mike Lithco, also of Menlo, in referring to the same observation, "The two doors are card-access only, and I have to grant people access to get in." This is rhetorical problem because unintended values are being communicated to the audience of the building.

In addition to this need for safety and security enforcing a runaway milieu on the building, the Menlo Center and the InnoNation, based on how their buildings were formerly

used, are subject to antiprograms that are elements of runaway milieus as well. “In a lot of spaces, we don’t have a lot of control over the kind of light we have, and we have HVAC noise. Right now there is the sound of water going through a pipe over by MENLO” (Temper). An industrial designer also from the Menlo Center complained about the “race track” configuration of the design studio space outside of the Menlo innovation space, which originated from the space as a factory floor. When one track works its way around an entire room, he says, it creates a natural barrier; there is no natural flow to the layout because it is geometrical from the original network of the factory floor. The factory floor, in its previous existence, exercised a material rhetoric upon those who originally worked in the space, but it continues to do so on those who would like to use the space differently. The InnoNation inhabits an old apartment building in Chicago; one floor above the main space it has a deck where innovators can practice “blue sky thinking” (Lamman); however, because of its former structure as an apartment it has a wrought iron spiral staircase to the deck. During one ideation session, several participants had to tilt their heads uncomfortably to see the front of the room around the spiral staircase, and the director of the space hit his head on it numerous times despite having covered it with black and yellow tape. Lamman, probably early in the space’s life, glued foam padding to it to protect against liability from head injuries in response to its existence in the space and the difficulty of seeing it as it was painted black. Symbolically, it serves as a small blight in the pristine purple space, but its existence, it redirects the movement and behavior of site participants. This unintentional response contradicts Lamman’s program of action of affiliating with the network of Chicago’s heritage by bringing *all* elements of the former space network into the current space and reminds us of the material semiotic assertion that rhetoric can include agency without intention. Both the Menlo Center’s former factory milieu and the InnoNation’s former home milieu reveal that, as

Bryant says, objects will be objects regardless of what we do or say about them (Bryant 26; Harman “An Outline” 194) The rhetoric of objects is often unintentional, but human actants have to be aware of the withdrawn nature of objects and their abilities to persuade behavior within the space.

In another clash between the program of action of network facilitators to affiliate to the heritage of their local communities and the antiprogram of the physical spaces themselves to simply exist, the larger context of the city where the site appears often conveys a message that conflicts with the facilitators’ messages. Contradictory to Catalyst’s philosophy of using space to disrupt rigid rules and hierarchy, the site is near a congested intersection in the city where cars line for blocks or even miles. Present is the continual reminder of laws and rules that linger within the limited parking and the threatening signs as well as the presence of police officers patrolling the area. So here we have a space that says be free and have no rules that is materially surrounded by a context riddled with limitations and materially enacted politics. Electech, at least the old building of Electech, represented another contradiction between the site’s program of action and the context of the site’s program of action. It was in an unsafe neighborhood in inner city Milwaukee, and one engineer referred to “negative influences around the facility” (Buds). “We were constantly reminded from outside influences that it was not a safe place to work” he added. “You would look outside and see the 8-foot tall fence with four feet of barbed wire on top; we constantly heard about an occasional gun incident within a three block radius; we had bullet holes in the windows” (Buds). Buds reveals that affiliation with the network of the neighborhood in which the site is located brings the positive aspects of the neighborhood, such as the neighborhood’s heritage, along with its negative aspects. While sites like Outlaw Lab, Venture Wald, and Electech want to capitalize on Milwaukee’s manufacturing history, the

affiliation also includes the less desirable elements of the Milwaukee network such as its poor inner city education, drug problems, segregation, and high level of poverty. Because of the vastness of this network and the inability for humans to control withdrawn and “runaway” objects (Spinuzzi “Losing By” 453), Electech had no choice but to be placed in this Milieu physically, and the milieu’s agency influenced the work and thinking in the space. Overall, these issues are all related to rhetorical ambience, how “that which surrounds” shapes thinking and behavior (Rickert122). Unfortunately, many people don’t consider ambience from a broader perspective, possibly noticing the antiprograms that milieus seem to enact on spaces within them.

The final program of action I addressed in the analysis section was the interessement of actants into the network. This is different than affiliation because affiliation seeks connection with already-existing networks, and interessement forms new networks from scratch, enrolling prospective actants through communication strategies such as branding. However, just like with affiliation, interessement is subject to uncontrollable agency enacted by objects that might defy the facilitators’ programs of action and their material attempts to enact them. I will now address the antiprograms that may appear in response to the attempt to interesse actants into networks.

Interessement of Actants

We saw above that innovation proponents use ambiances and their constitutive nonhumans to shape the movement, action, behavior, and belief that leads to idea generation. However, just as affiliating with an existing network enrolls unfavorable agency that may defy a program of action, enrolling nonhumans to interesse innovators and other actants into an innovation site network can also produce unfavorable results. Though this antiprogram wasn’t as prevalent as the runaway milieu program, interested actants, mainly human ones, occasionally interfered with the site facilitators’ programs of action through the enrollment of rarefying

actants. Rarefaction is Foucault's term which he describes as a process, policy, or artifact that claims that "none may enter into a discourse on a specific subject unless he has satisfied certain conditions or if he is not, from the outset qualified to do so" (Foucault 158). Occasionally, the cultural biases of ideation session participants were reinforced either intentionally or unintentionally by actants within the site.

At the same innovation session in the Outlaw Lab where a participant overtook the space and exerted undue authority, three company employees, two from marketing and one from information technology, revealed tension through their dwelling within the space. They were in Outlaw Lab's "west corral" generating a stakeholder's map. The two marketing employees asked the IT employee to draw as they were discussing. Each time one of the marketing employees identified a stakeholder, the IT employee sketched not images of people but of objects such as a nursing hat with a cross for the nursing stakeholder. On two occasions, the marketing employees asked him to draw people rather than symbols, but the IT employee kept doing it. After about 10 minutes, the marketing employees started their own board within the corral. In creating a new map they migrated toward the corner of the corral, physically isolating IT employee from the discussion. Seemingly oblivious to the freeze-out, the IT employee continued using symbols as stakeholders on his own board. From a material rhetoric perspective, the exchange is intriguing for multiple reasons. The first is the demonstration of cultural values through illustrations. In the minds of the marketing employers who work more with people than objects "stakeholders" meant people. The IT worker, however, considered stakeholders to be places, nonhumans, or things. Unwittingly, the three innovators proliferated the bifurcation that Latour has attempted to overcome in ANT by implying that humans are isolated or "purified" from objects (Latour *We Have Never* 11; Rickert 82). Ironically, while these actants tried to reaffirm a dichotomy between

objects and people or nature and culture they also were, unwittingly, employing nonhumans to make cultural statements and physically confirm cultural beliefs that IT employees just don't understand them. The new dry erase board was the first artifact they enrolled, which physically turned their gaze away from the IT worker. Additionally, much like the manager who took over the meeting with his authority that same day, these two marketing employers enrolled the dry erase marker as a means to exercise power, for whoever holds the dry erase marker gets to decide what ideas are important enough to inscribe. Finally, the marketing employees leveraged the West Corral itself as a rarefying space. The walls, networking with the marketing employee's backs, isolated the one actant from the pursuit of a new idea.

This troubling observation reaffirms the importance of overcoming the bifurcations counterproductive to innovation strategies. It is possible, too, that the nonhumans involved, such as the corral wall, were enacting their own agency of limiting a small amount of people into a space and controlling the direction of attention. Specific to intersement of other actants into the innovation site network is the reality that actants will bring with them their own assumptions and sometimes their own material means of rarefaction based on disciplinary or cultural differences. Though innovation spaces like Electech and Menlo Center seek to overcome this by all-but forbidding walls in their location and drawing no material distinction between disciplines in their design studio, these rarefactions sometimes are still enacted by nonhumans or the ones that join the interested human actants as part of their network. The underlying issue with all of the programs and antiprograms is rhetorical agency and control. Innovation sites are battle zones torn between the efforts of programs of action initiated by site facilitators and antiprograms initiated by agentive nonhumans. Thankfully, in innovation sites, there is a way to balance these two forces, and it depends on the material semiotic commitment that humans and nonhumans can

distribute agency equally to change realities. I will now address what this networking of humans and nonhumans looked like during my innovation observations.

Nonhumans Networking with Humans

Given the principle of general symmetry, what might conceptualizing innovation sites as actant-networks reveal about how humans engage with nonhumans during the ideation process? How do material actants interact with other material actants to produce ideas? (76; Latour “Technology is” 105; Callon and Latour 343).

So far my analysis has determined that innovation site facilitators as well as the material ambiences of the spaces enact programs of action that shape ideation. They do this in various ways based on values of innovation such as flattened hierarchy, serendipitous collaboration, and affiliation with pre-existing credible networks. However the ANT concept of agentic nonhumans reveals that physical locations, objects, ideas, and their constituted networks often push against these programs of action as antiprograms (Latour “Technology is” 107; Spinuzzi “Who Killed Rex” 50), undermining beliefs about innovation and shaping behavior sometimes in unhelpful ways.

My final move is to describe how innovation occurs as a networked process between humans and nonhumans, establishing a balance between the programs initiated by facilitators and the antiprograms initiated by nonhumans. In doing so, I employ the material semiotic commitments of general symmetry and agentic nonhumans to establish common ground between the agency of nonhumans and people within innovation spaces (Latour “Technology is” 107; Rickert xii). A material semiotic strategy that professional innovators employ to balance programs and antiprograms is attuning to withdrawal and leveraging it for ideation (Rickert 8). This section will describe those strategies in emplaced innovation. It will then identify some artifacts that intersect human and nonhuman agency for ideation.

Leveraged Withdrawal (attunement)

Withdrawal, according to Rickert, “confronts us with the dark riches from which not just knowledge but our capacity to flourish in the world emerges” (Rickert 209). Innovators unaware of the withdrawn nature of objects are often controlled by it, according to my findings. In my observations, the most successful innovators achieved a balance between human and nonhuman agency by attuning to and embracing withdrawal. For them, allowing objects to descend below their awareness enhanced creativity. Other innovators, though, actively arranged their contexts so they could fight against withdrawal as they were creating; they wanted to be reminded of the presence of the room and their material interaction with the nonhumans in the room to feel grounded and “in the moment.”

In the sessions, those who leveraged withdrawal valued the flexibility that nonhumans afforded when nonhumans disappeared below human attention. During an ideation session at Menlo Center, for example, one group was writing a skit as part of a product pitch, and they slid the Menlo couches together into a square, manipulating their space so they could better collaborate in a more private spatial arrangement. The couches slid smoothly into place, and the innovators didn’t fall out of their ideation mode as they continued generating an idea constellation even while adjusting the couches. The couches took on new meanings, new spatial arrangements, and new patterns for “organizing the world differently” (Rickert 209). As the hammer in Heidegger’s famous example becomes an extension of the body, the couches became an extension of the group interacting with them in ideation (Harman; Latour). The couches are flexible thanks to the furniture sliders Pietz has enroll as part of the site design. The sliders, by virtue of their slippery surface, make swift reorganization of space possible. This swift reorganization of space plays a vital role in all innovation at the Venture Wald where innovators consist of teams of computer programmers uniting around problems. Venture Wald employs

cubicle walls and partitions with wheels. The wheels, like the sliders, endure only a small amount of friction, so as the teams organize themselves, the nonhumans remain withdrawn but still serve as powerful rarefying actants to keep teams of computer programmers together into one space to work on problems. This mitigates both material and social “friction.” Those partitions, then, have dual purposes. Teams use them to organize themselves, but they also use them as identity artifacts, writing the names of teams like “Thunder Chickens” as a rhetorical means of identifying all group members.

This is the promotion of withdrawal through the enrollment of nonhumans that, when engaged with other nonhumans, attains a smooth workflow. Things such as furniture sliders and wheels with their frictionless interaction with things like carpeting and rugs create a “blackbox” where the technical work of arranging the innovation site is “made invisible by its own success”, allowing the group to focus not on inputs and outputs as much as successful ideation (Latour *Pandora’s* 138). Like Heidegger’s hammer as an extension of the hammerer, the couches are an extension of the thinker/collaborators (Heidegger; Harman).

In rarer cases in the research, some innovators wanted to be aware of their ambience and the nonhumans constituting it while they were ideating. Sandy Ronson, of Red Ball Marketing, strives for awkwardness in how she arranges brainstorming rooms for example. “The more ways you make the space uncomfortable makes people attune more to the space and be more engaged” (Ronson). Ronson doesn’t allow chairs in brainstorming rooms because she wants to disrupt the space rather than sink into it. When she does allow chairs, she arranges them sporadically to shake up the thinking of the innovators. Brainstorm Shelter has a similar approach to this intentional discomfort. The director of marketing says the space purposefully enrolls bright colors and distracting Knick knacks to “disrupt and disorient common thinking” (Devins).

Ronson of Red Ball Marketing seems to think that such a disruption leads to spatial awareness and establishes authenticity in the user. Professional designers, she says, whether they be artists or architects, strive for authenticity with “perfect imperfections” in their designs (Ronson). You can see this, for example, in the difference between an amateur photograph and a professional one; in many cases the amateur centers his/her subject, yet the professional places the subject subtly askew. Ronson believes the same for spaces. Dwellers within spaces want to and need to be reminded of their own humaneness and the imperfections of their thinking. Ronson believes this authenticity can also be achieved through tools that are “perfectly imperfect” (Ronson) and remind people they are using them. When I told her about Heidegger’s hammer, she said she would prefer the broken hammer as it would remind her of her groundedness in space and time and the visceral rawness of the creative process. Overall, while it was more common for innovators to praise spaces and nonhumans that withdraw and become extension of innovation groups, occasionally, innovators who value authenticity strive to limit withdrawal to ground their thinking in the material location.

When a human attunes to the withdrawn nature of an artifact, the artifact becomes more than a runaway object enacting an antiprogram that is counterproductive to what the innovator seeks to accomplish (Spinuzzi “Losing by Expanding” 453; Latour “Technology Is” 110). Instead, they become inscriptions, which Latour says are values that have transformed into tangible, material, nonhumans (*Pandora’s Hope* 25). Innovators who engage with objects based on their inscribed nature, then, overcome the discrepancies between programs of action and antiprograms. This next section will address the inscriptions that some innovators leveraged in the workplace to help them generate ideas.

Inscriptions

According to Latour, ideologies and interests are embedded in things whether those be linguistic things like scientific manuals or material things like speed bumps or hotel room keys (Latour “Society Is”; Callon 143). In the innovation sessions, the merging of the human and nonhuman for ideation often happened through inscriptions wherein the cultural values of innovation from the innovation sites materially network with the innovators. Rhetorically, the embodiment of values in material things permits action from afar, allowing actants removed temporally or geographically from the site of innovation to still intervene in the innovation (Chua 6). In the next section, I address the inscriptions I observed and explain how innovators used them to innovate.

The Know Brainer

The InnoNation employed a linguistic inscription in the form the “Know Brainer” tool, a heuristic embodying Lamman’s values of innovation. The Know Brainer classifies four types of thinkers. The first type, the investigator, is analytical and cautious; his/her role in innovation is inquiry about similar innovations generated before and the process to produce them. The creator, the second type of thinker, is the idea person; this thinker generates an abundance of potential ideas from which to choose without much attention to the quality of the idea. Determining idea quality is the purview of the Evaluator, whom tests the idea against what’s currently on the market. However, an idea never reaches the market without the Activator who transitions the team from ideation to implementation based on a focus on results. Lamman’s methodology unites these thinkers for effective innovation, asserting that at least one kind of each thinker should be in every innovation team. However, if any team is missing a thinker, the Know Brainer serves as an inscription that encompasses all four kinds. This allows Lamman to exert “remote

control” (Murdoch 362) by expressing his ideologies of innovation through the tool (Robson 685; Law “On the Methods” 235).

The Know Brainer is, essentially, a rolodex categorized into the four main types of thinking Lamman believes are needed for innovation. Each section, labeled based on the type of thinking it applies to, contains inspirational quotes, questions, and words that represent the values of the different thinking types. Teams can flip to the categories as a stand-in for the type of thinking they are seeking so that the tool, in a way, talks to them (Law “On the Methods 235). Lamman claims the Know Brainer has at least 14 uses such as achieving goals, overcoming challenges, solving problems, increasing sales, creating products, brainstorming, training, and coaching. The participants in the InnoNation used it mostly as a problem solving artifact.

The Know-Brainer tool is an example of a Latourian inscription because it affords the “comparative, normalizing judgement” that permits innovators not physically present during the time of innovation to intervene in the ideation (Callon 143; Law “On the Methods” 236). It also embodies the innovation viewpoints of Lamman and other professionals who produced the tool as it translates his interests “into material form” (Callon 143). These materialized interests transcend both geography and temporality because, as Latour argues, temporality is not linear but networked and that each moment in time is an actant that shares agency with every other moment in time (Latour “Technology is” 56). Old ideas can be made new again. The Know Brainer is an effective inscription because it translates the “provisional, less durable, and less reliable” verbal utterance of questions or ideas from one innovator into an artifact that can be reproduced, shared, carried, distributed, and applied in a variety of contexts (Latour “Where Are The Missing” 176).

In the session at InnoNation, four innovators from a pharmaceutical company joined their agency with the tool and its embodied ideologies to better define a problem. Rhetorically, they engaged with the object not as an artifact but as a coworker who had knowledge different from their own. They posed questions out loud and then randomly flipped to a page. At one point, in response to their problem the tool “asked” them “What should people know?” They responded by discussing the importance of clearly articulated deadlines for completing development projects, which revealed that they have no standardized way of communicating deadlines. To solve this problem they decided to design software that articulated deadlines and expectations to all employees. The Know Brainer enhanced their thinking by embodying the values and viewpoints of a professional innovator who wasn’t physically present in the group, leading to that idea as a result. The Know Brainer is a unique combination of visuality and materiality. It provides visuals such as colors that match up with the forms of thinking desired. As an artifact, it is hand-held, and its spiral binding means humans can access the extensive knowledge of innovators outside of the time and space of the innovation site. As a result, ideas emerge that human actants never could have generated alone, expanding the possibilities and reality of their space.

Along with uniting human actants to the Know Brainer tool to generate an idea, I also encountered idea generation made possible through the intersection of human actants and writable surfaces. Like the Know Brainer heuristic, the writable surfaces afforded inscription. The difference between the Know Brainer and the writable surfaces as inscriptions, though, was that the Know Brainer extended Lamman’s innovation methodology; its contribution was from outside of the team. The dry erase board, on the other hand, afforded articulation of ideas that emerged from within the innovation teams by enhancing both ideation and articulation. I will

elaborate on those writable surfaces now as inscriptions for embodying knowledge that led to ideas.

Writeable Surfaces

A common problem I noticed in ideation sessions was difficulty articulating ideas. Ideation demands a unique form of multitasking wherein participants originate concepts and express them at the same time, which caused tension within the innovators, proving to be a rhetorically complex process. The innovation spaces that fostered the most interaction via the presence of writable surfaces were most successful in overcoming this tension. They enhanced the communication process by embracing the rhetorical affordances of the material in the space. In a session at Outlaw Lab, for example, a school district innovated a strategic plan that would cover the next three years of the district. One group struggled to articulate how to move from their current state in standards-based grading to their ideal state, looking for a bridge between the two through a drawing of their process on a dry-erase board. After staring at the illustrated process separated into boxes for five or ten minutes, one participant seemed struck with an idea. The gap between where they are and where they want to be can be overcome with some kind of object or tool, he told the group. The group then started brainstorming objects until they stumbled across the thought of a report card for themselves as a unifying factor between where they are and where they want to be. Additionally, the man, again using the board, said that report cards haven't been standardized because every set of grades in the school district is based on different standards. The group suddenly realized the idea as he started talking about it, and another group member said "quick, write it down." She threw him the dry-erase marker, and he jotted it down on the board.

Secondly, the being of the dry erase marker, and its affordances of inscribing temporary ideas so they can be shared with others also alleviated the tension this man felt in having an idea

and attempting to explain it at the same time he was generating it. Thirdly, the writing surface persuaded writing on it because it freed participants from constraints of size and organizational restrictions like grids and columns. The freer mode of writing was rawer and more like scrawling. The frictionless surface of the board allowed the marker tips to move more smoothly across it, alleviating the distraction of friction. An abundance of markers placed nearby, enhanced the sense of freedom in articulation as any marker can be employed at any time, and the markers can be freely swapped. Additionally, and this was confirmed by an interior designer who specialized in office spaces, dry erase boards afford a temporariness that alleviate the pressure of generating keepable, usable ideas. Sandy Ronson, in her interview, said humans feel a release of tension around dry erase boards because whatever is written on them “feels” temporary. If an idea on a board proves unacceptable it can effortlessly disappear with minimal stakes. This persuades thinkers to take more risks, and it affords the rhetorical act of jotting versus the rhetorical act of writing, which tends to happen on indelible surfaces like notebook pages and results in differing communications. Finally, dry erase boards afford the serendipitous collaboration that innovation requires because they serve as focal points around which humans circle. Ideas are inscribed and visualized commonly so innovators can, to some extent, collaboratively take a “step back” and glean information about companies and process from the illustrations.

When networked with participants’ habits, behaviors, and thoughts, the temporary nature of the dry-erase surface persuades a trial mentality or even the entrepreneurial mantra of “fail fast and fail often” (Babineaux 1) in its goal to generate a solution constellation. A solution constellation, again, being a collective of ideas a company may be able to capitalize on and apply to make into a product. Additionally, we see the importance of Latour’s notion of inscription as

the material affordance of the dry erase marker congregates people around it and, in some sense, depicts company processes, company policies, and even the cognitive processes of innovators. Once those unattainable qualities are made more attainable through the networking of dry erase markers, dry erase boards, erasers, wheeled boards, and moveable boards, they can suddenly be discussed in a tangible way for an entire group of people. One could even say that the visual illustrations and the material affordances of the illustration tools network the brains of innovators together, making that ideation network that much more durable.

The prevalence of inscriptions in the form of dry erase boards in these sessions affirmed the Menlo Center's adage: "If it is not written down, it doesn't exist," so writable surfaces proved useful both for recording ideas and generating them, and participants used writable surfaces as a means of motivating ideation. As Carole Blair indicates, the "apparatus and degree of durability" of an artifact often conveys the importance, authority, and agency of that message as well as its credibility (37); the degrees of durability in the case of the dry erase marker make a rhetorical claim on the participants that helped them innovate more freely.

Another nonhuman that networked with the human actants and their dry erase boards, persuading them to jot down ideas were Post-It notes. Like dry erase boards, Post-It notes afford translation of concepts out of the ether of the human mind and into a more linguistic and material artifact, making human thought tangible (Latour "Technology is" 109). Material characteristics such as smallness, brightness, adhesiveness, and abundance not only afford ideation but also categorization and organization. Session participants can enact material rhetoric by sharing and transferring the ideas and rearranging them. If it weren't for the paper, the thoughts wouldn't be transformed and, most likely, the ideas would dissipate for lack of durability. Thus, it enacts reality-shaping and makes certain realities possible while rendering other realities impossible,

which is a function of rhetoric. With a less durable material, as Carole Blair says, “all opportunity to study the original even has evaporated with time” (38). Blair frames as this as a disadvantage to memorializing events, but innovation spaces and the interior designers I talked about tout less durable artifact as a benefit. Artifacts that afford easily erasable ideas convince innovators that their ideas are temporary, moveable, and flexible, which relieves pressure. While the dry erase surface and the paper of the Post-It notes are material, innovation session participants, through writing on them, transform them into material-linguistic inscriptions of human thought. In most cases, according to Rickert, the strictly material nonhumans are overlooked, but they should be acknowledged in rhetorical analysis because of their role in human flourishing (Rickert x). The final inscription I noticed that humans embraced were already-existing innovations. Leveraging these innovations for further ideas yields the innovation process I call object-oriented knowledge brokering.

Innovations

Another form of inscription common in the innovation sites are alinguistic, asymbolic embodiments of knowledge in the form of innovated objects. These objects are inscriptions because they are knowledge made material, so they afford borrowing from one context to another (Robson 691-692; Callon “Some Elements” 6). This is a material rhetoric approach to establishing “connections between otherwise disconnected pools of ideas” (Hargadon and Sutton 158). The *Harvard Business Review* says “knowledge-brokering” involves capturing ideas through observing activity, retaining the knowledge that produced already existing innovations, imagining novel applications for old innovations, and testing promising concepts through prototyping (Hargadon and Sutton 160-165). The knowledge-brokering process promotes observing, tinkering with, and studying objects, and the emphasis here is on objects and not linguistic nonhumans like blueprints or instructions, which don’t initiate human-object networks

as effectively. According to the article, in fact, IDEO and other high profile innovation firms stockpile archives of old innovations; they then rent the objects to innovators for attempting old solutions to new problems (Hargadon and Sutton 162). IDEO once applied a mechanism from a squirt gun to a design for a saline injector used at hospitals, for example. Reebok's iconic Pumps of the 1990s were inspired by blood pressure cuffs, IV bags, and valves used in diagnostic equipment (Hargadon and Sutton 162). These objects freeze and materialize what Amabile calls "domain-specific information" (189) so that information can be enacted from a temporal, spatial, and geographic distance (Latour "Technology is" 103). From a modernist perspective, Edison, for example, cannot verbally communicate to Menlo Center innovators how to reinvent the lightbulb because that viewpoint maintains that the past is rendered irrelevant by the present and that the past, present, and future are bifurcated from one another (Latour *We Have Never* 68). Latour's networked approach to temporality reveals that the original designers of technologies become embodied in the designs themselves, so the designers still are present, expressing values and knowledge. This is like Latour's speed bump in that it maintains the social and legal ideas that created it when it "tells" a car to slow down by jarring its undercarriage (Latour *Pandora's Hope* 186). This assertion, then allowed me to identify several instances of object-oriented knowledge brokering in my research, which on a larger scale, were great examples of humans networking with nonhumans for ideation. I will address some of the object-oriented knowledge brokering I discovered now.

Industrial designers in the Menlo Center frequently display designs from diverse industries like automotive and telecommunications on the walls of their space to broker ideas, and they frequently experiment with prototypes and innovated objects. These work to generate ideas because they make knowledge tangible; the knowledge can be engaged with and

experimented with on a human level because the object incarnates the knowledge. Additionally objects can talk to, engage with, and interact with one another as constituent parts of webs whose elements define and shape one another (Law “Actor-Network Theory” 7). This embodiment of knowledge into objects was especially common in the Menlo Center. One industrial designer, Ryan Walter, told me that a team of designers once test-drove a high-end Mercedes to borrow ideas from it. While testing it they noticed that touch-screen controls hindered users’ senses of presence and interactivity. Walter also informed me that doorknobs have built in anti-microbial qualities and that he was thinking of ways to broker those material qualities into the design of MRI scanning interfaces. The doorknob and its parts exist in a network of semiotic relationality, and Walter seeks to enroll it into another. Furthermore, the knob is also an inscription and an extension of the knowledge of the scientist who originated it. Also, Walter once brokered the design of a personal MP3 player for a wearable heart monitor. Its affordance of streamlined portability embodied in the object helped him earn a patent on the concept, and Menlo Center’s parent company produced the design. In another innovation session with industrial designers from the company’s MRI imagining division, engineers were seeking to enhance the usability of an MRI cart. A local restaurant catered dinner for their break. When the caterer rolled the food in on an intuitive catering cart, the engineers took interest. After a brainstorming session, they discovered how to incorporate the cart’s affordances into their object, borrowing the embedded knowledge of the cart from the catering network and enrolling it into the medical imagining network.

Thus, another way participants engage in a network of humans and nonhumans during ideation is through studying, dissecting, and borrowing nonhumans that embody ideas from heterogeneous disciplines. This can happen linguistically, through things like writable surfaces,

schematic drawings, and other design plans, but innovators transcend space, time, and even culture when they stockpile nonhumans and analyze them for knowledge that can be applied to new innovations. This is possible, ontologically, and it is relevant to the rhetoric employed in innovation sites because “rhetorcity emerges from as the materialization of human ideas and hence as a secondary materialization of what is originally a primary thought” (Rickert 22).

Overall, this section sought a balance between the programs of action of facilitators and the antiprograms of nonhumans by describing how human actants can join forces with nonhumans for innovation. In innovation sites, this occurs in the “entanglements” between humans and objects, which produce inscriptions or knowledge incarnated into a tangible form (Latour *Pandora’s Hope* 28). Inscriptions in the innovation sites take the form of object-oriented knowledge brokering where things embody the values and the knowledge that created them and are mined to create something new. This balance occurs when we accept that humans and nonhumans share agency and describe innovation in action with the principle of general symmetry (Latour *Pandora’s Hope* 182; Latour *Reassembling* 76; Latour “Where Are” 174).

Chapter 5: Conclusion and Implications

This work contributes to current rhetoric research by illuminating the values and tensions that emerge when a site is analyzed as a linguistic-material phenomena. My findings not only revealed the values of innovation underlying the design of innovation spaces, but they also revealed how nonhumans can enact agency to enforce programs of action for good or ill. This chapter summarizes my research questions and my answers. It then details the implications for PTW/rhetoric scholarship, PTW/rhetoric pedagogy, and innovation practice.

Summary of Research Findings

In this study, I combined the material-semiotic approaches of actor-network theory and ambient rhetoric to analyze innovation spaces. My interest, mostly, was in how the human and nonhuman actants in these sites distributed agency to foster innovation. Following Rickert's lead in *Ambient Rhetoric*, my objective for this project was to expand rhetoric and rhetorical analysis beyond just symbolic or linguistic and into ambient or "the diffusion of rhetoric into environment" (Rickert x). I expanded on Rickert's work by fusing his framework with Latour's network construct and applying Rickert's notion of persuasion embedded in "that which surrounds" to the materiality of corporate and community innovation sites. My resulting project reveals how innovation site facilitators employ material rhetoric to persuade creativity and how objects and nonhumans, by virtue of their agency, may defy these goals with "antiprograms." The project also reveals how humans and nonhumans network with one another for idea generation (Rickert x; Latour "Technology is" 107; Latour "The Berlin Key" 11). My research questions designed to pursue this inquiry were as follows:

- 1) What programs of action do innovation site facilitators, designers, and directors pursue, and how do they enroll material nonhumans (tools, objects, technologies, ambiances) to embody their values of innovation and enact those values upon participants within innovation sites (Latour "Where are" 166)?

My research illuminated four programs of action the site designers or innovation site facilitators promote. These programs and the material means of achieving them revealed multiple values of innovation in the process of emplaced innovation. The first was the flattening of traditional corporate hierarchy. Many innovation site facilitators believe that too much authority in innovation spaces hinders ideation because it introduces undue pressure such as competition, tight deadlines, and proprietorship. Though it proved both impossible and unnecessary for sites to completely flatten hierarchy for innovation, many nonhumans in innovation sites helped limit hierarchy with artifacts such as anarchic furniture that put human bodies on a physically equal plane with one another.

The second main program of action was the cultivation of serendipitous collaboration. Designers and facilitators manipulate physical space to unite heterogenous bodies to increase the likelihood of communication and problem-solving across diverse perspectives. Prescriptive pathways that leading into wide, circular rooms were a common artifact enrolled in support of this program of action; these might be considered material trading zones as they are “locations in which communities with a deep problem of communication manage to communicate (Collins, Roberts, and Gorman 658). However, perhaps even more effective for increasing collaboration is space that leverages physiological needs such as food, drink, bathroom, and sunshine to bring bodies together. Often, these two approaches were employed together through the use of kitchens and bars or the placement of devices like coffee makers and fridges in one spot that all employees of the innovation space had to visit at some point.

Thirdly, sites sought affiliation with a currently existing, durable network to enhance their credibility. The assumption beneath the affiliation is that affixing a nascent network to an already existing durable network such as an innovation exemplar like Thomas Edison or a local

community's heritage is a more efficient means of network-building than building a network from scratch and then seeking allies from other networks. From my observations, affiliation was successfully achieved once innovation session participants acknowledged that they were a part of an innovation network consisting of both the innovation site and the innovation exemplar or local community.

- 2) Ontologically, while innovation site facilitators enforce their programs of actions, are material nonhumans in the space also enforcing antiprograms that are limiting, unethical, or detrimental to innovation without participants noticing? If so, in what ways might participants be oppressed by the withdrawn agency of nonhumans or the ideologies they embody within innovation sites? (Harman "An Outline" 194; Bryant 26; Rickert 168; Bogost "Object-Oriented Rhetoric")

Clashes, tension, and paradoxes abounded once my research focused on the programs of action initiated by nonhumans in the sites. I found that while facilitators enact programs of action, facilities fire back, enacting competing ones, which can be, at best, detrimental to innovation and, at worst, oppressive. When it came to flattening hierarchy in one case facilitators tried to convince participants that there were no rules for ideation while other nonhumans simultaneously enforced rules such as no technology allowed in the innovation site. Most of the Electech designers who are introverts, for example, loathe the openness of the space. While administration may have intended the open space to mediate collaboration it often actually mediates distraction, suspicion, and exposure. In fact, some of Electech's engineers have even been persuaded by nonhumans like short cubicle walls to work in their cars for privacy. Outlaw Lab's site design also was affected by an antiprogram launched by nonhumans that formed an inhabitable zone of authority in the front of the room. As a result one participant, during an innovation session, entered the "authority zone" (dry erase board, computer, direction to which all desks were pointed) and dominated the meeting, even employing nonhumans like dry erase markers to overthrow the innovation facilitator's techniques. Finally, in the Menlo Center, the

material milieu of a building that was a former factory hindered the innovation ambience in the space by enacting programs of action remaining from the site's original purpose.

Materially, all of the sites are placed in milieus that embody the ideologies of their original designers, usually upper management which is a challenge for innovation. Cultural milieu conflicts come to the surface through material rhetoric analyses. Because the innovation sites exist within some kind of hierarchy there will inevitably be clashes between the facilitators' programs of action to express freedom and the managers' needs to control the work in the site with regulations and finances. Viewing this paradox materially reveals that workspaces are in constant struggle between ideals of freedom and ideals of hierarchy that initiated those workspaces in the first place. Additional research is necessary to identify similar paradoxes in workspaces, communities, and schools.

- 3) Given the principle of general symmetry, what might conceptualizing innovation sites as actant-networks reveal about how humans engage with symmetrically agentic nonhumans during the ideation process? How do material actants interact with other material actants to produce ideas? (76; Latour "Technology is" 105; Callon and Latour 343).

Describing innovation sites as actant-networks revealed many ways that humans entangle with nonhumans during ideation. First off, nonhumans can mediate behavior that results in idea generation. Writable surfaces throughout the spaces and tools like Post-it notes encouraged participants to record ideas the innovators were not confident in because the surfaces afforded temporariness and sharability. Those ideas were then easily posted and arranged on poster paper or dry erase boards or simply thrown out if they eventually proved not to be useful. Nonetheless, if the goal of an emplaced ideation session is to produce a solutions constellation, writable surfaces and Post-Its play a key role in that, allowing more ideas to be generated, listed, and shared.

The levels of attention innovators paid to nonhumans like these during ideation varied. Many innovators capitalized on nonhumans that afforded withdrawal such as furniture sliders and wheels that whisked artifacts around the space so the materiality of these elements did not interfere. Other innovators, however, avoided withdrawal by enrolling nonhumans that reminded them that they were working, existing, and being within the physical space. While one innovator at Red Ball Marketing, for example, said he liked the cushioned grip of his because it feels like “an extension of myself,” another innovator said she purposely uses tools that make themselves known to her to remain in the present authentic moment (Ronson).

The research also indicated that innovators use nonhumans to transfer ideas from the ephemeral realm of thoughts to the material realm of paper, ink, and pens through inscription. Certain inscriptions like InnoNation’s Know Brainer were material embodiments of expertise that could be accessed even after brainstorming sessions ended. The Know-brainer consisted of linguistic elements such as thoughts, ideas, and questions, but it also consisted of material affordances such as the binding which allowed for the cards to be flipped through and the glossy surface which enhanced grip while indicating the value of the card. From a strictly material perspective, however, my research also revealed that innovators use already existing objects as handheld museums that reveal the knowledge that constituted them in the first place. These objects are then dissected by innovators or they remain intact but certain characteristics of them are applied to other disciplines or used to solve other problems that the object wasn’t originally intended for. This is the notion of object-oriented knowledge brokering, and it is an important because it complicates the current business innovation concept of knowledge-brokering.

My insights— as addressed in chapter 4 and summarized in the previous section— enrich PTW/rhetoric research, PTW/rhetoric pedagogy, and the practice of emplaced innovation in

work. I will address each area one by one below, elaborating on the implications of my research and findings.

PTW/Rhetoric Scholarship

A material approach pushes rhetoric scholarship in fertile new directions. This was obvious as I was writing and making extensive observations about how material nonhumans enact rhetoric on humans. My research on emplaced ideation revealed insights about PTW/rhetoric commitments such as ethos as affiliation, the limited access language grants to material nonhumans and processes, the ethical implications of expressions of power and dominance, and communication through branding. In addition to contributions of these findings, the structure of the research contributes to rhetoric scholarship by providing a heuristic for a material analysis of “rhetorical places” (Mountford 48; Dickinson 7; Pigg 4).

The Ethos of Affiliation

Extensively researched, the attainment of ethos is an enduring concern of rhetoricians. There are multiple methodologies for obtaining ethos such as Aristotle’s triad of phronesis (practical knowledge), arête (virtue), and eunoia (good will) and Herndl and Licona’s expansion of this, which implies that the triad does account for agency but agency is shifting and can be inhabited for credibility rather than generated or built (Aristotle; Herndl and Licona 134). However, this project demonstrated that credibility has materiality and can be obtained through a reversal of Callon’s notion of translation. In this reversal, networks don’t seek to enroll new actants into themselves but instead strive for affiliation with already existing actants that embody Aristotle’s three elements (Callon 6; Latour “Technology is” 107). Once the affiliation occurs, the larger networks can interesse smaller ones, enhancing network credibility. This was the case with multiple innovation sites that attained credibility through affiliation with innovation exemplars like Einstein, local community networks of manufacturing and innovation, and

nostalgic networks of childhood memories. Network ethos is obtained through the multiplication of actants, and innovation sites often employ this reverse translation to establish their credibility, so it follows that other networks could enhance their credibility through this same process, which is an expansion of ANT methodology and opens the door to future research in network affiliation in rhetorical studies. This opens further inquiry into how new networks affiliate with established ones to visually, verbally, and materially “lock-in” affiliates and enhance network ethos (Callon “Some Elements” 3).

Limited Access to Material Objects and Processes

Because of their agentic properties, all actants withdraw and humans have limited access to the inner lives and meanings of objects (Bryant 14; Rickert 52). Prior research reveals the nature of withdrawal and how objects, during their course of use, disappear into networks of other objects. However, my findings reframe withdrawal from a phenomena of object relations to a potential innovation strategy. Some innovators consider withdrawal an asset because it helps them focus on creation while others seek to limit withdrawal by purposely removing nonhumans from “presence at hand” (Rickert 17; Heidegger as qtd in Harman *Tool-Being* 283) When it comes to innovation is it better to embrace withdrawal or to avoid it? Perhaps, it could be a little bit of both and attunement involves knowing when to embrace and when to avoid. This warrants future research in cognitive processes and human-object interaction. In addition to my contributions to human access to material objects, this work also contributed to human access to material processes. Latour asserts that society is durable via an actor-network analysis of innovations (Latour “Technology is”). My research reveals that an ANT analysis of an innovation can happen earlier: during the initial ideation stage. This describes how humans and nonhumans join forces in networks for causations in the world. This joining of forces will usually be in support of the program expressed by the closest linked actants, yet sometimes a

human can enact this program of action the way Gary Lamman of the InnoNation and Dan Pietz of Menlo Center did: through affiliating their networks with already existing durable networks like community heritage and innovation exemplars. Other times, though, this program of action is imitated and enforced by nonhuman actants that enroll other actants and networks that undermine one program of action for innovation. Usually, as Latour says, the program which becomes most dominant has collected enough allies through the process of translating them into the network, aligning their priorities with one another (Latour “Technology is”; Callon “Some Elements” 6).

Another way that innovation becomes durable is that inscriptions are created in the innovation process, and they move half-formed concepts from the ephemeral realm of thought to the material realm of artifact. This happens linguistically when innovators scrawl ideas on nonhumans that afford temporariness, reorganization, and sharing. It also happens materially when innovators mine existing objects to decipher the knowledge, ideas, and creativity embodied in the thing and then replicate the object or expand on it. This notion— “object-oriented knowledge brokering”— asserts that ideas are not just linguistically constituted but materially constituted as well, and this allows them to be moved from one expert domain to another. The notion that one ideology from one discipline or culture can be initiated into another through a material artifact promises some potential rhetoric research in cross-disciplinary and cross-cultural collaboration.

Ethical Implications of Expressions of Power and Dominance

Rhetoric’s humanistic commitments include democratization of communication, cultural criticism of oppressive power structures, and communication ethics. Traditionally, this is pursued through linguistic analyses rooted in social constructivism and postmodernism. My project, with its underpinnings in the nonhuman rhetorical turn, elucidates oppressive values as embodied in

workspace. These nonhumans act with agency apart from intentionality and can often undermine the rhetorical intentions of people. Though I am not the first researcher to apply ethics to ideologies embodied in artifacts (see Winner, Bennett, Coole and Frost, Biesacker and Lucaites, Selzer and Crowley), this research provides precedence for the analysis of competing programs of action within material locations (Latour “Technology is” 106) and the identification of dangers posed by the agency of “Runaway Objects” and milieus enacting antiprograms (Spinuzzi “Losing by Expanding” 449). Rhetoric in the last 30 years has identified oppression by powerful organizations and individuals, and it has critiqued the agency of cultural groups and its responsibility; however, rarely has rhetoric exposed nonhumans as extensions of oppressive viewpoints, so this research has implications for future studies that analyze the material extensions of oppression.

Communication through Branding

While object-interaction in workspaces should be further researched to identify oppressive programs of action so should the process of initiating actants into networks via branding. There were multiple findings related to branding as rhetorical communication. First off, innovation sites, like retail stores are branded spaces. Facilitators immerse actants in the values and cultures of their space through communication techniques like branding to enhance creativity and expand their networks.

This leads to my second finding: branding as mechanism for imposing and stabilizing actants’ identities (Callon 8). In “Some Elements of a Sociology of Translation” Callon acknowledges interessement mechanisms such as force, seduction, or solicitation depending on alliance of actants’ purposes (Callon 9). When it comes to emplaced innovation, branding is a seduction technique with brute materiality. Site facilitators attempt to enroll multiple actants such as colors, logos, stories, shapes, and spatial arrangements based on the brand they wish to

convey in the innovation space. The implications for this form of interessement, however, go beyond innovation sites to a variety of locations such as retail stores, amusement parks, shopping malls, workplaces, offices, corporations, universities, schools, and cities. This would be especially useful if researchers applied Marxism or other economic theories. Analyzing branding as a linguistic phenomenon is interesting; however, a rich insight of this project is that branding is also material, for organization or community values are conveyed via nonhumans, ambience, spatial arrangement, or even sensory details. How, for example, might Disney use smell and taste in its theme parks to interesse actants? What do Apple Stores sound like and how does that sound shape thinking and behaving? How might the pathway prescribed by the sidewalks in a new shopping center ally with customers and their accompanying actants to create new networks? Aside from physical spaces, PTW/rhetoric researchers could also analyze commercial products as nonhumans that make rhetorical claims on consumers, inquiring how they ontologically persuade movement, behavior, and thinking.

Heuristic for a Network Analysis of Rhetorical Space

Place analysis is a common project in the PTW/rhetoric scholarship. I mentioned only a few of the literature's numerous place analyses in my first two chapters. They include Blair's analysis of memorials (18; Blair and Michel 29); Dickinson's and Pigg's analysis of coffee shops (6; 3); Ackerman's analysis of cities and everyday locations (89); Mountford's work on fictional locations and gender (40); and Weil and McAlister's rhetorical analysis of subdivisions (102). Many of these projects, especially Blair's and Dickinson's, attune to the material rhetoricity of space; however, my work—because of its focus on programs, antiprograms, and symmetry—offers a heuristic for future rhetorical place analyses. This three-part approach could be applied to projects as diverse as city parks, universities, landmarks, and a variety of work environments such as factories, startup incubators, medical facilities, office suits, and retail buildings.

PTW/Rhetoric Pedagogy

In response to demands in higher education for pragmatic approaches to writing compatible with technology studies, today's PTW/rhetoric professors must prepare students for communication in an era of "ambient intelligence" and "ubiquitous computing" (Rickert 285). This entails a rhetorical approach to innovation and its process as well as a material semiotic grasp of nonhuman agency. Therefore, this project is kairotic, and it contributes to the PTW/rhetoric pedagogy in that it trains students to leverage both symbolic and material communication, expands student understanding of rhetorical context and its agency in communication, and encourages students to think critically about their invention and innovation process. There are also multiple implications for PTW/rhetoric in planning, instruction, and evaluation of college-level courses

In preparation for academic and workplace communication, students must understand the ubiquitousness of rhetoric and its analytical affordances. Students, of course, need a foundational understanding of the symbolic and linguistic characteristics of rhetoric in writing courses; however, we can expand their critical thinking by emphasizing the material nature of rhetoric in addition to the linguistic, which can enhance their awareness about the messages they encounter on a daily basis and the apparent intentionality and motives behind these messages. If students understand that materiality is rhetorical and that they are subject to materially-conveyed messages, they can also learn how to leverage this rhetoricity for persuasion or to enhance their writing, thinking, or inventing processes. Professors, likewise, should be aware of the emplaced material rhetoric this project elucidates, especially when conceptualizing the physical space where learning happens. My work prompts reflection on how the nonhumans of communities, campuses, and classrooms and their agency may undermine instructors' intentions by furtively enacting oppressive ideologies through material means. My focus on antiprograms (Latour

“Technology is” 107; Latour “The Berlin Key” 12) will help instructors identify potential paradoxes present in their course planning and use of classroom space. It blazes trails for projects analyzing the classroom as a material network. This could include research on furnishings and a description of material nonhumans that enact agency in class discussions or an analysis of how nonhumans native to the learning space enhance or hinder learning. Finally, there are multiple implications on the practice of innovation for teachers and students; however, I will now focus on implications for professional innovators in a variety of capacities whether they be industrial designers, engineers, or facilitators of innovation spaces.

Innovation Practice

As I indicated in chapter one, innovation is an inherently rhetorical process consisting of complicated and nuanced communication. Up to this point, however, innovation studies across multiple disciplines have been mostly anthropocentric and, therefore, incomplete. This project promises innovators a more comprehensive understanding of the innovation and how it is influenced by nonhumans such as furnishings, décor, spatial arrangements, and objects. It empowers innovation facilitators to communicate their innovation site values through material means by viewing their sites as actant-networks, and it empowers the innovators themselves to enhance their own innovation process by leveraging the nonhumans that populate the space. Rickert refers to this as “dwelling” within the space or “attuning” to the materiality of space. My work also illustrates material semiotic innovation processes such as leveraged withdrawal and object-oriented knowledge brokering that network humans and nonhumans.

Conclusion

Ideation is a rhetorical process rooted in cultural assumptions. By extension, ambiances designed to cultivate ideation are engaging, value-rich, dynamic, and often contentious. Because of the agency of things, causation isn't the exclusive purview of humans. However, we can get

closer to leveraging space if we practice what Rickert calls “attunement” at all times not only acknowledging the agency of nonhumans, but also willingly working with nonhumans to shape reality. Innovation site facilitators can obtain a balance between competing programs if they attune to the distribution of agency in space. This balance allows participants to seize the opportune space, capitalizing on affordances for rhetorical activity in the same way classical rhetors sought to “seize the opportune moment” (Aristotle, White 13). I would add that we must also “seize the thing” in order to keep rhetoric relevant in our “ambient age” (Rickert ix).

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Appendix

Representative Interview Questions

Professional Innovators

1. Share with me your main roles and responsibilities in this position. What do you like most about them?
2. Describe for me a space or location that you've been where you felt most creative and most innovative. Think about the details of that location especially related to spatial arrangement, decorations, furnishings, and the sensory details of the place (sights, sounds, smells, feelings, tastes). Why do you think these characteristics make you feel more innovative?
3. What are some of the features of your current workspace that you think help you to be more innovative and collaborative with both your co-workers and with the objects and tools your company provides you with?
4. Do you agree with this statement: "Setting is not just a backdrop to human work; it is a participant in that work." If you do agree with it, how do you justify it being true?
5. Do you think it is possible for a workspace to embody an ideology/philosophy? Do you know of some locations that seem to do this? If so, how do you think this happens?
6. Have you ever used the words "creative vibe" to describe a space that you really liked for innovation? Break that "vibe" down. What are the elements of a space that work together to create that vibe?
7. On a scale of 1-10, rank, on average, how aware are you of the environment in which you're working while you're coming up with new ideas for processes, products, and inventions?
8. What tools, objects, or furniture do you interact with the most in the innovation process whether you're developing a new product, policy, technology, or service?
9. Finally, what tangible elements of a space do you think contribute to making that space more collaborative? From your professional experience, are there spaces in your workplace or community where you feel more collaborative than other spaces?

Office Space Designers

1. Describe your personal and professional background. What got you interested in the interior design of office spaces in the first place? What elements of your background do you incorporate into your designs?
2. Talk about your and your company's philosophy of effective innovation. How do you think a space ought to be designed to encourage innovation? How has some of your interior design work in the past reflected this perspective?
3. What "nonhumans" do you think contribute most actively to creativity when humans interact with them (dry erase boards, scrap paper, tables, chairs, etc)?
4. After years of designing innovation spaces, what has been the most surprising insight you've gained in terms of how people interact with artifacts and space in the innovation process?
5. When asking clients what they most like about some of your model innovation spaces, have any of them ever expressed that the spaces have some kind of "vibe" to them? What kind of "vibe" do they commonly describe, and what do you think is behind that idea the space has a vibe? In other words, how can interior design foster "vibes?"
6. Do you feel that space serves as merely a backdrop for ideation in process, or is it an actual participant in innovation? If you believe the latter, in what ways do you think space participates in innovation? To put it another way, what are some actions, behaviors, and thoughts that your interiors have persuaded people to have?
7. There is a current workplace trend toward designing space to be more human-centered and to flatten traditional hierarchies of work. Do you agree that this is the right direction for innovative industries? What do you think the future of innovation space design will look like?
8. Do you think it is possible for spaces to inhabit ideologies or theories that exist completely apart from the intervention of human activity? If so, how might this work? How can material exist separately from what we know and think?

Curriculum Vitae

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EDUCATION

Ph.D. in English (Professional Writing), University of Wisconsin-Milwaukee, May 2016
Dissertation: *The Ambience of Innovation: A Material Semiotic Analysis of Corporate and Community Innovation Sites*

MFA in Creative Writing, Minnesota State University, Mankato 2007
Thesis: *Hills from Hell: Biking the Upper Mississippi Valley* (creative nonfiction)

BA in English, *summa cum laude*, Lakeland College, Sheboygan, WI, 2004
Senior Project: *The Ritchie Legacy* (novella)

TEACHING EXPERIENCE

English Instructor *UW-Milwaukee* (2011-present)

- Teach business writing, composition/rhetoric, writing for social media, and writing for the job search in person and online
- Employ pedagogical technologies like Google Drive, Desire 2 Learn, and You Tube to design and lead activities
- Design objectives, assignments, in-class activities, policies, and collaborative projects that enhance critical thinking and literacy
- Assess student writing for evidence of Bloom's higher orders of thinking and fulfillment of course objectives

Mechanical Engineering Communications Specialist *UW-Milwaukee* (2013-2015)

- Designed and led writing labs that contextualized engineering communication practices such as cross-disciplinary collaboration, technical writing, and professional writing for engineering undergrads
- Assessed workplace memos, technical reports, expository and persuasive speeches, and data visualization based on course objectives and professional communication theories
- Collaborated with engineering professor to design online presentations about the role of the humanities in engineering

Academic Facilitator *Cardinal Stritch University Milwaukee, WI 2008-2013*

- Tutored undergraduate and graduate students in college of nursing, business, and humanities, customizing each lesson to student need and assignment requirements/expectations
- Designed comprehensive social media plan for the Academic Support Center to promote our services and make our tutoring accessible to commuter students
- Tutored developmental writing students enrolled in the Academic Support Center's (ASC) College Achievement Program (CAP) to empower them to perform to higher education standards
- Experimented with Blackboard Illuminate and Go-To Meeting synchronous online teaching platforms to offer online tutoring in real time
- Requested by interpersonal communication professor to lead in-class grammar workshops for undergraduate nursing majors

Online Writing Tutor *Smarthinking.com 2007- 2012*

- Tutored globally diverse writing students on an exclusively online platform
- Suggested lower order and higher order improvements online using word processing software and a comprehensive response form
- Responded to client writing questions
- Utilized asynchronous communication platforms such as drop boxes for innovative and accessible instruction

English Instructor *Cardinal Stritch University Milwaukee, WI 2008-2012*

- Planned and led multiple sections of basic, intermediate, and advanced composition to traditional and nontraditional undergraduate students
- Designed curriculum based on the Catholic Franciscan values of reverencing creation, peacemaking, establishing community, and showing compassion for a first year experience course
- Designed multiple ethnographic assignments intended to immerse Stritch students in their surrounding community and reflect on their experiences
- Prepared a diverse group of students for demands of college writing based on their writing levels and instructed them with tailored feedback one-on-one

English Lecturer *Marquette University_Milwaukee, WI 2007-2010*

- Designed multiple intermediate rhetoric and composition courses for traditional-aged freshmen and sophomores emphasizing critical literacies
- Assigned and assessed oral presentations that helped students practice workplace communication
- Embraced the Jesuit principle of “caring for the whole person” in designing curriculum, assignments, in-class activities, and lectures

- Capitalized on concepts of writing across the curriculum to deliver applicable instruction in academic literacy, news literacy, media literacy, narrative literacy, civic literacy, and workplace literacy
- Designed innovative activities using technologies like Desire 2 Learn (D2L), Youtube, Microsoft, and Twitter to engage a mostly Millennial group of students

Creative Nonfiction Co-teacher *Minnesota State University Mankato, MN 2006-2007*

- Co-taught an upper-level creative nonfiction workshop for juniors and seniors
- Led discussions that analyzed and provided feedback for aspiring nonfiction writers
- Advised students on publication opportunities and graduate school selection

English Instructor *Minnesota State University Mankato, MN 2005-2007*

- Planned and autonomously led three sections of freshman composition in computer classrooms
- Used D2L for online discussion boards, class chat sessions, assignment drop boxes, class announcements, and grading
- Created an introduction to creative writing course covering poetry and fiction in a computer classroom using chat, discussion boards, and computer simulations for writing exercises
- Incorporated pedagogical technologies like Smartboards into classroom instruction, exercises, and assignments

Graduate Assistant *Minnesota State University Mankato, MN 2004- 2005*

- Graded undergraduate papers for writing intensive education classes
- Applied computer technologies of D2L and Microsoft to the paper-grading process
- Presented workshops to education classes about grammar, structure, and mechanics
- Tutored education students one-on-one

JOURNALISM/ PROFESSIONAL WRITING EXPERIENCE

Freelance Content Writer *Cardinal Stritch University, Milwaukee, WI (2015-present)*

- Generate web-based articles targeted toward prospective Cardinal Stritch students describing the campus culture of the university
- Create search-engine-optimized content designed to funnel Google searchers to Cardinal Stritch's webpage
- Brainstorm new content ideas that will instruct and inform college-bound adults while also promoting the university

Co-Founder *Startup Docs PR and Content Consulting, Delafield, WI 2013-2015*

- Evaluate potential clients' blog posts, social media plans, and online content for viability and audience focus
- Write instructional blogs for the business and entrepreneurial community demystifying and applying professional writing theory
- Apply narrative theory to helping lean technology startups tell their stories to prospective investors, coworkers, and clients
- Identify public relations needs for client companies and helped co-founder pitch relevant media outlets

Editor-in-Chief *Lakeland College Mirror*, Sheboygan, WI 2003-2004

- Made executive decisions regarding editorial content
- Copy edited sections of the paper for conciseness, format, grammar, and mechanics
- Founded the “fun house” humor section of the newspaper, which later garnished awards at the Best of the Midwest Convention in Minneapolis, MN
- Led several breakout sessions for features and humor writing at the Best of the Midwest Convention

Marketing Assistant *Lakeland College*, Sheboygan, WI 2003-2004

- Assisted director of communications with promotion of the four-year school
- Created radio spots and press releases targeting college-bound students
- Presented recruitment speeches to potential students
- Scouted photographic content and modeled for campus view book

Features Editor *Lakeland College Mirror* Sheboygan, WI 2001-2003

- Selected editorial content for the features section of the award-winning bi-weekly newspaper
- Made executive decisions regarding editorial content
- Copy edited sections of the paper for conciseness, format, grammar, and mechanics
- Wrote weekly humor column that was ranked the most popular in the paper

Creative Services Intern *NBC26 and UPN32 studios* Green Bay, WI 2002

- Recruited a local band to perform in an advertising spot I had written which boosted their popularity
- Wrote news teases for 5:00, 6:00, and 10:00pm broadcasts
- Assisted creative services and production with promotions and local television spots

Fiction Editor *Lakeland College Farrago* Sheboygan, WI 2000-2001

- Reviewed creative writing submissions to the monthly magazine
- Designed the fiction section of all of the 2000-2001 issues

Staff Writer *Lakeland College Mirror* Sheboygan, WI 2000-2001

- Wrote features and hard news articles for the paper
- Generated article ideas targeted toward college students

TEACHING COMPETENCIES

- **Professional/ Technical Writing:** business writing, writing for social media, rhetoric of technology, qualitative research, medical writing, entrepreneurship, writing for nonprofits, cross-disciplinary collaboration, professional writing theory, technical writing for engineers, digital rhetorics
- **Composition/Rhetoric:** developmental writing, prescriptive grammar, freshman composition, advanced composition, workplace writing, speech
- **Journalism:** feature writing, news writing, editing, blogging, new media
- **Career Development:** writing for social media and the job search, the rhetoric of application packets
- **Creative Writing:** poetry, fiction, creative nonfiction, literary journalism, screenwriting, literary magazine practicum
- **Literature:** reading, contemporary literature, introduction to literature

CAMPUS AND COMMUNITY SERVICE

Co-Leader of Fellowship for Christian Athletes (FCA) Huddle North Shore Middle School, Hartland, WI 2011-present

- Cooperating with my wife to design student-centered Bible studies
- Leading open gym nights for fellowship
- Promoting the huddle to potential attenders
- Mentoring middle school students seeking to learn about God

Adult Basic Education Tutor Literacy Services of Wisconsin Milwaukee, WI 2010-present

- Help adults in inner-city Milwaukee struggling with illiteracy learn to read
- Assist students with preparing for GED test
- Mentor one student struggling with emotional and learning disabilities

Child Sponsor Compassion International Ministries Colorado Springs, CO, 2009-present

- Sponsored a 10-year-old boy living in poverty in Ecuador
- Paid a monthly donation to provide child with food, clothing, education and medical care

Assistant Volleyball Coach Grace Lutheran Church Menomonee Falls, WI 2008-2009

- Created drills in practice designed to foster teamwork, anticipation, communication, and stamina
- Served as positive role model for ten eighth grade boys
- Assisted the coach in designing effective lineups and plays

Connections Team Leader Impact Christian Ministry Brookfield, WI 2008-2009

- Welcomed newcomers to the single, twenty-something community
- Attended monthly outreach meetings and discussed new ways to attract members to the group
- Created small groups that fostered spiritual, emotional, and mental growth
- Ministered to individuals struggling with faith issues

VOICE Task Force Member Marquette University Milwaukee, WI 2007

- Designed composition/rhetoric lesson plans that made students aware of sexual violence issues facing the campus
- Suggested ways for first year English teachers to incorporate sexual violence awareness in their classes

CONFERENCE PRESENTATIONS

- “Seizing Opportunities to Move from ‘Say’ to ‘Do:’ The Very Real Work of Enhancing Public Sphere Literacy.” North Carolina Symposium on Teaching Writing, 2013
- “Bodies of Knowledge: The Effects of Nonverbal Cues on Class Participation in Composition.” Those Who Can, Teach, Milwaukee, WI, 2012.
- “Computers in the Creative Writing Classroom.” Great Plains Alliance for Computers and Writing, Mankato, MN, 2006.
- “Newspaper Writing Critiques” Associate Collegiate Press Best of the Midwest Convention, Minneapolis, MN, 2006.
- “Making Them Talk: An Interactive Approach to Effective Interviews for Feature and Human Interest Stories.” Associate Collegiate Press Best of the Midwest Convention. Minneapolis, MN, 2006.
- “Going Undercover: Exploring Literary Journalism and Immersion Reporting.” Associate Collegiate Press Best of the Midwest Convention, Minneapolis, MN, 2005.
- “The Craft of Nonfiction.” Minnesota State University Creative Writing Conference, Mankato, MN, 2004.
- “Shtick em’ up: The Art of Lighthearted Journalism.” Associate Collegiate Press Best of the Midwest Convention, Minneapolis, MN, 2004.
- “The Night of the Living Deadline.” Associate Collegiate Press Best of the Midwest Convention, Minneapolis, MN, 2004.

REFERENCES

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