How Firms Innovate:
Exploring the Role of Language in
Organizational Innovation

by

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Abstract

While innovation is largely considered an organizational activity, a handful of studies in the organizational literature illustrate that it is individuals who innovate. Despite this, we are still left wondering: What role do individuals play in producing innovation outcomes in organizations? In this dissertation I divided this overarching question into three sub-questions: 1) How do individuals innovate and why do they produce different types of innovation outcomes?; 2) Why do individuals engage in innovation?; 3) Why and how are some ideas shared and developed into innovation outcomes, while others are not? To answer these questions I followed an inductive process; analyzing the interview transcripts of 32 individuals from three high-technology organizations, looking for patterns in the data first before I sought explanations for my findings from the literature. I addressed one question in each of the chapters of my dissertation. I repeatedly found that the individuals in my study fell into two distinct and mutually exclusive groups based on the different words and phrases they employed to talk about innovating. Individuals' language indicated that each group of individuals approached innovating differently, and thus had different 'innovation orientations'. I found that each group of individuals was motivated to pursue a different set of goals, which led them to engage in different types of innovation practices and produce different types of innovation outcomes. My findings add to the current conceptualization of innovation as I did not find that individuals' innovation orientations, the goals they pursued, the innovation practices they engaged in or the innovation outcomes they produced were related to the roles individuals played in the organization or to their training. Furthermore, I found that the nature of the organizational innovation outcome was related to the orientation of the idea's initiator, and to the initiator's ability to successfully share the idea with others. My findings suggest that aligning individuals' roles, tasks and job requirements to their innovation orientations may enable organizational leaders to successfully produce the types of innovation they desire and increase the production of innovation outcomes in the organization.

Keywords: innovation; innovating; individual; innovation outcomes; innovation orientation language; pragmatics

For Daniel and Kayla

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Chapter 1.

Introduction

Motivation

This study was motivated by many years of working in and with innovative organizations. In my interactions with individuals and teams involved in creating new things in the firm (e.g. websites, marketing concepts, software programs), and new ways of doing things (e.g. new customer handling procedures, project management processes), I observed that it was not the job functions that produced these innovation, nor the departments, nor the organizations. I found that *individuals* produced innovations. I repeatedly found that the innovations that were produced in organizations came about because of innovative individuals. I found, though, that the role of the individual in the process of innovation is generally not described in this way in the literatures on innovation, strategy and management.

What do we know about innovation?

The strategy literature adopts a structural perspective that depicts innovations as the outcomes of 'innovation functions' in the organization, in which individuals perform tasks defined by these functions. Scholars distinguish between radical[1] and incremental innovations, arguing that individuals in manufacturing, operations and administrative functions produce incremental innovations by refining existing processes, improving

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[1]In this context I use the term 'radical innovation' to refer to both architectural and radical ("non-incremental innovations" [Tushman et al., 2010; p. 1334]) innovations that require the firms to "destroy the usefulness of their existing capabilities" (Henderson & Clark, 1990; p. 13).

product performance and enhancing production efficiency (Benner & Tushman, 2002; Christensen, 1997; Cohen & Levinthal, 1990, March, 1991). On the other hand, scholars propose that those in engineering, R&D and marketing functions produce radical innovations by developing new processes or products that set the firm on new technology trajectories or situate the firm in new markets (Eisenhardt & Tabrizi, 1995; Henderson & Clark, 1990; Tushman, Smith, Wood, Westerman & O'Reilly, 2010; Schumpeter, 1942; Venkatraman & Chi-Hyon, 2004). However, empirical results of the relationship between innovation functions and innovation outcomes are ambiguous (Lavie, Stettner & Tushman, 2010), and leave unanswered the question of the determinants of different types of innovation outcomes and the role of individuals in producing these outcomes.

Organizational scholars, by contrast, have explored the determinants of innovation outcomes by focusing on the process of transferring knowledge across groups (Carlile, 2004; Cohen & Levinthal, 1990; Daft & Weick, 1984; Leonard-Barton, 1995; Nelson & Winter, 2002; Nonaka, 1994; Weick & Quinn, 1999). Many of these researchers adopt the perspective that knowledge is language (Bechky, 2003; Carlile, 2004; Orlikowski, 1996), because language contains the ideologies, rules, practices, and operating procedures that comprise the common knowledge held by the members in a group (Barley, Meyer, & Gash, 1988; Fairclough, 1995; Lawrence, 1999; Giddens, 1984; Greenwood, Suddaby & Hinings, 2002; Rorty, 2006). Groups are identified based on the knowledge and corresponding language that are common to individuals who do a similar task (Barley et al., 1988; Brown & Duguid, 1991; Garfinkel, 1967; Goffman, 1893; Lave & Wenger, 1990). Multiple groups can exist within a single organization, and each group's members will have common understandings of and ways of talking about their world (Bechky, 2003). Innovation, therefore, is said to happen at the boundaries between groups when knowledge is transferred from one group to another group (Carlile, 2004; Leonard, 1995; Star & Griesemer, 1989; Obstfeld, 2005). Innovations are produced when the receiving group accommodates the new knowledge into its existing knowledge, or alter its knowledge (Barley et al., 1988; Bechky, 2003; Brown & Duguid, 1991; Rorty, 2006).

Although many studies depict innovation as an inherently collaborative process (Gibson, 2001; Hargadon & Fanelli, 2002; Hargadon & Bechky, 2006; Hinds & Bailey,

2003; Leonard & Swap, 1999), numerous scholars view individuals as central players in the innovation process. Individuals are identified as especially important in the initial phase of creating and shaping ideas (Kurtzberg & Amabile, 2001) and in bringing groups together to transfer ideas (Carlile, 2004; Obstfeld, 2005). However, perhaps drawing on assumptions from the strategy literature, individuals are generally cast as playing roles constrained by their organizational functions and tasks (see Bechky, 2003; Dyer, Gregersen, & Christensen, 2008; Hargadon & Bechky, 2006; Utterback, 1974). Few studies, therefore, investigate whether the assumption holds that individuals produce the types of innovation outcomes defined by their functions or the roles that individuals play in producing these outcomes. This led me to articulate my research question as:

> *What are the determinants of different types of innovation outcomes and the roles of individuals in producing these outcomes?*

Research approach

Guided by the work of the organizational theory scholars mentioned above, I adopted a language lens and designed my study around gathering and analyzing how individuals spoke about innovating. I chose to gather my data from a theoretical sample of organizations that were reputed to be innovative (Dougherty & Hardy 1996, Eisenhardt 1989; Hargadon & Bechky, 2006). I selected three high-technology organizations in the Pacific North-West of America because they were known to me and my dissertation committee, and would thus give me access to the individuals in the organizations that were involved in innovating. A second reason for selecting these organizations (rather than organizations in any other industry) was because they provided a context that was considered legitimate in the academic literature for studying innovation.

I gathered my data through semi-structured interviews of individuals in the organizations identified by managers and peers to be engaged in innovating. I interviewed a total of 32 individuals across the three organizations (see Table 1).

Table 1. **Number of Interviews across My Theoretical Sample**

	FutureSmart	ParadigmShift	GreatInsight
No. of interviewees	11	7	14
No. of employees	28	10	160

I then took a grounded theory approach (Glaser & Strauss, 1967) to analyzing the language individuals used to talk about innovating. My aim was to explore whether there was a relationship between what individuals said they did and produced in the organization, and how they described these things. In a similar way to how Glaser and Strauss (1967) focus on patients' attitudes and behaviours to generate a theory about social loss of dying patients, I focused on the words and phrases, descriptions and contexts that individuals employed in order to generate a theory of their role in producing different types of innovation outcomes.

My analytic approach using language to explore the relationship between an individual and what he/she did and produced when engaged in innovating, however, is different from that generally employed in other types of textual analysis (see Weber, 2005 for a comprehensive review of different types of textual analysis). For example, I did not look specifically for the *presence or absence* of particular words, as in content analysis. I did not specifically seek to discover the *positioning* of particular words or phrases within a transcript, as in semantic analysis (Carley, 1993, Roberts, 2000; Weber, 2005). My individual-level focus on the language and descriptions used in each line of an individuals' transcript set it apart from narrative analysis, which sees a body of speech or text as a *single story* (Czarniawska, 1998; Franzosi, 1998; Greimas, 1987; Weber, 2005). Furthermore, because I did not enter into my analysis with the view to uncovering commonly used words and phrases that reflected more *widely-held assumptions, beliefs, ideologies or institutions*, my approach differed from that generally used in discourse analysis (Foucault, 1972, Weber, 2005).

I then analyzed this language data, using a rigorous process of coding, memoing and definition-building (Miles & Huberman, 1984). To reduce potential interpretation bias, I enlisted the help of a research assistant. Together, the research assistant and I

discussed and debated the codes we assigned to how individuals spoke about innovating and the patterns we observed in the data (Barley, 1996). Our discussion and debate were central to the definitions I built for codes and to my articulation of the relationship between individuals, the types of things they did in the organization and the types of innovation outcomes they produced.

Analysis

As mentioned above, I analyzed each interview transcript by applying grounded theory principles; following an iterative process of constant comparison (Glaser & Strauss, 1967). The five-step process involved:

1. assigning codes to what individuals said, by asking myself, "What label (or code) can I assign to what this individual is saying in this line?";

2. creating definitions for codes, stipulating the conditions for assigning the code to other lines;

3 grouping similar codes into categories by comparing multiple instances of each code across multiple lines and transcripts to clearly identify the relationships between the codes and to identify similarities so that I could group them into categories;

4. creating category definitions; and

5. repeating the process for each instance in which individuals spoke about innovating.

As I proceeded through the coding process I wrote memos on how categories seemed to be related. Throughout the process I developed mini-theories about relationships between categories. After multiple iterations of the process, I used the codes, categories, definitions, and mini-theories to generate an overall theoretical model of the roles of individuals in producing different types of innovation outcomes (Glaser & Strauss, 1967).

Early on in my analysis, three key themes emerged. The first theme pertained to the individuals in my sample, the different types of things they did in the organization and the different types of innovation outcomes that they produced. The second related to

individuals' motivations for engaging in innovation. The third concerned sharing ideas, and why and how this influenced the development of innovation outcomes in the organization.

Each of these themes seemed important to the roles of individuals in producing innovation outcomes, however, handling all three themes at once was unmanageable. So I dealt with each theme individually as a separate study and a separate chapter of my dissertation. For each study, I repeated the grounded theory process mentioned before. However, the research question I asked in each study was different, leading me to look for different things in the data each time.

Therefore, using the data to answer a different question each time, I recoded the data for each theme, and therefore each study and chapter. For each study and corresponding dissertation chapter I developed a new set of codes and new definitions and discovering new patterns. As a result of this rigorous process, I gained insight into the role of individuals in producing innovation outcomes.

I have chosen to format each study as a stand-alone research paper, with the intention of submitting all three papers to academic journals for publication. Each paper is a complete study dealing with one of the themes mentioned above. Previous versions of the papers have been subjected to double-blind review processes for a journal and two specialized conferences. I presented Chapter 2 at the doctoral workshop of the Westcoast Research Symposium (2010). I submitted Chapter 3 to a special issue of Strategic Entrepreneurship Journal. Chapter 4 was presented at the doctoral workshop of the Ingenuity Conference (2011). The feedback I received from Joseph Lampel, Israel Drori, Kathleen Eisenhardt, Sonali Shah, Yan Gong, and three anonymous reviewers, has been invaluable in helping me strengthen, frame and order my arguments.

Overview of the dissertation

In the remaining chapters of this dissertation I present these three stand-alone research papers, as well as a final chapter consolidating my findings into an overall theoretical model. Below I discuss each chapter in more detail.

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Chapter 2 explores the question: *How do individuals innovate and why do they produce different types of outcomes?* Recent research in the organizational change literature suggests that individuals innovate, but does not explain the practices that they engage in to produce innovation outcomes, nor why some individuals produce incremental outcomes while others produce radical outcomes. By analyzing my language data I found two groups of individuals who engaged in different types of innovation practices. I also found that the types of innovation practices in which individuals engaged were related to the types of outcomes they produced.

Chapter 3 explores the question: *Why do individuals engage in innovation?* The extant innovation literature presumes that innovations are produced in organizational structures designed to fulfill organizational innovation mandates. New organizational change research, however, suggests that it is individuals who produce innovation (Howard-Grenville et al., 2011), not organizational structures. In addition, this research argues that individuals innovate even without instructions to innovate. However, the question remains: Why do individuals innovate? To explore this question, I conducted a mixed methods study. By qualitatively analyzing individuals' descriptions of innovating I found two groups of individuals who pursued different goals and were motivated to innovate in different ways. Furthermore, I found that individuals' motivations were associated with their approach to innovating. A quantitative analysis of individuals' responses to a regulatory focus survey revealed similarities and differences between individuals' regulatory focus and their innovation orientation.

Chapter 4 explores the question: *Why and how are some ideas more readily shared and developed into innovations than others?* In this paper I analyzed the language employed by individuals engaged in sharing 22 ideas and developing them into innovations. I found that in order for an idea to be shared and developed into an innovation, it needed to be presented by its initiator in language that was familiar to the receivers who would be required to participate in the development processes. I found that not all individuals were equally skilled at framing their ideas in language that was familiar to receivers, which had implications for the success of their attempts to share their ideas and have them developed into innovation outcomes.

In the final chapter (Chapter 5), I consolidate my findings into an overall theoretical model of the role of individuals in producing innovation outcomes. I discuss the theoretical and practical implications of my study, describe its limitations, and suggest directions for future research.

Summary of findings

In sum, the three papers that make up my dissertation, which each analyze the language that individuals use to talk about innovating from different perspectives relating to the question I sought to answer in each paper, triangulate my findings and enable me to propose a grounded model the determinants of different types of innovation outcomes (**Figure 1**).

I found that individuals who innovated fell into only two groups. Each group had a unique and distinct approach to innovating. Thus, contrary to the extant literature that suggests that innovation is purely determined by individuals' positions within innovation functions, I found that individuals produce innovation outcomes related to their innovation orientation.

The model that I generate here proposes that there are distinct groups of individuals who engage in innovating. Each group of individuals is motivated to innovate and, correspondingly, approaches innovating differently. In other words, each group has a unique innovation orientation. Individuals initiate ideas associated with their innovation orientations. The development of ideas into innovation outcomes is related to individuals' ability to successfully share their ideas using commonly understood language. Finally, the types of innovation outcomes, that are developed after ideas are successfully shared, relate to idea initiators' innovation orientations.

Figure 1. ***Theoretical Model of the Role of Individuals in Producing Innovation Outcomes***
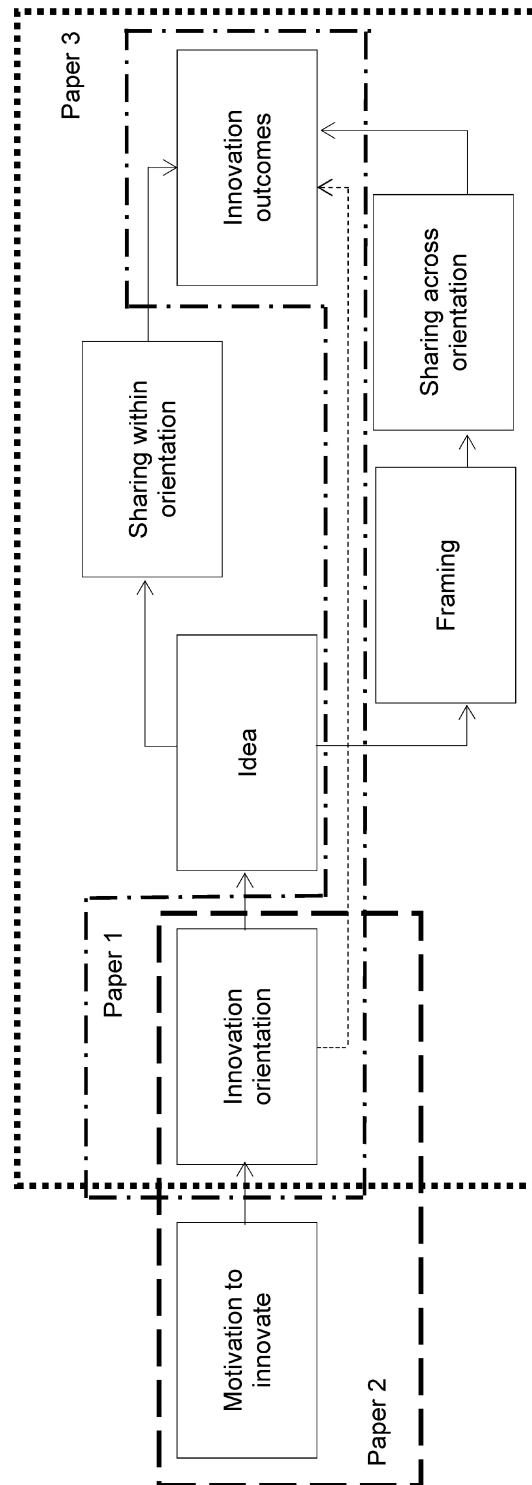
Chapter 2.

How Individuals Innovate and Why They Produce Different Types of Innovation Outcomes

"There are two kinds of people in the world, those who believe there are two kinds of people in the world and those who don't." - Robert Benchley

When I interviewed Nell[2], the customer relationship manager at FutureSmart and one of the first few employees at the communication-application start-up, she told me about the early months at the organization. She found that soon after joining the organization, she started to struggle to track orders placed by a growing number of clients. Orders placed with her were fulfilled out of another office, by a junior manager several hundreds of miles away. As the number, frequency and complexity of orders grew, Nell found them increasingly difficult to co-ordinate over the organization's virtual private network. The slow network connection meant that frequent rush orders, cancellations, or changes in the priority of orders could not be handled. Frustrated, Nell decided that the organization needed a new order management process. In a chance conversation, a friend proposed the option of using a free online tool to manage FutureSmart's orders. Nell looked into and immediately installed the tool. She designed and introduced into FutureSmart a new order management process using a tool that had not previously been part of the organization's operations.

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[2]   In line with confidentiality agreements, all individual and organization names have been disguised.

At around the same time, FutureSmart's systems experienced a massive failure during which the organization's network went down. Nell's boss, Harry, the operations director at FutureSmart, was in charge of the company's IT systems at the time. The failure had occurred unbeknownst to Harry. Instead, the first to know of the network failure was a key customer that found itself unable to access critical information during a trade-show demonstration, causing FutureSmart great embarrassment. Harry determined that it was necessary to put in place alerts that informed him regularly of the network's availability status, and instituted a process improvement on top of the organization's existing IT system that enabled him to intervene immediately, or at least warn customers, in the event of similar failures in the future.

Nell's story involved an emerging situation in which she had to cope with a growing number of customer orders. To do this, she devised a new process to track and monitor orders. Harry's story involved a sudden breakdown in a system designed to transmit customer information. To avoid future embarrassment, Harry developed and installed alerts to discover failures before FutureSmart's clients discovered them. Both stories involve doing something new in the organization. Both stories suggested that individuals do new things in the face of changing circumstances. Howard-Grenville and her colleagues (2011) propose that individuals like Nell and Harry innovate by finding spaces and opportunities provided or permitted by the organization. However, while these scholars suggest the conditions under which individuals in the organization might innovate, they leave unanswered the question: *How do individuals innovate*?

Furthermore, the new things that Nell and Harry introduced at FutureSmart seemed to be different. Nell's idea required that the organization do something it had not done before. Harry, on the other hand, introduced a new practice that built on top of what already existed. Drawing from the innovation literature, we can understand Nell's new process to be a radical innovation, while Harry's is more of an incremental innovation (Christensen, 1997; Cohen & Levinthal, 1990; Tushman et al., 2010). However Nell's and Harry's stories raise the question: *Why do individuals produce different types of innovation outcomes?*

To answer these two questions, I build on prior work that explores how innovation happens in organizations by studying the process at the individual level (e.g.

Boxenbaum & Battilana, 2005; Bechky, 2003; Carlile, 2004; Hargadon & Bechky, 2006; Howard-Grenville, Golden-Biddle, Irwin, & Mao, 2011). Following the research designs employed in these studies, I look at how individuals in three innovative organizations talk about innovating in order for me to gain insight into how they innovate and why they produce different types of innovation outcomes. In the remainder of this paper I explain the inductive process I followed. First, I introduce the literature in which I situate my research questions and on which I base my research design. Then I describe my research method, and present my findings. I propose a theoretical model and finally discuss the implications of this model for theory and practice.

Liminality, Individuals, Innovation and Language

Liminality, individuals and innovation

In their paper, Howard-Grenville and her colleagues (2011) explain that individuals make and use spaces and opportunities to introduce new ideas, thereby changing how the organization does things (i.e. innovating). The authors define these spaces and opportunities as "liminal" because they are "bracketed from yet connected to everyday action in the organization" (p.522). Individuals described in their paper use familiar practices to introduce new ideas and, in so doing, introduce change to the organization. The authors argue that an organization's support of innovation, learning and "the ability to perceive and test reality" (Howard-Grenville et al., 2011: 537) are boundary conditions for individuals' use of liminal spaces and opportunities for the purposes of bringing about organizational change.

In their study, Howard-Grenville and colleagues (2011) identify the individual as a source of innovation. The authors show that innovation outcomes result from the individual's ability to "[open] crevices" (p.523), or identify and create liminal spaces and opportunities to present new ideas. The authors demonstrate that innovation outcomes are produced by individuals who are not necessarily assigned innovation roles, nor given specific instructions to innovate. This provides an alternate perspective on innovation to the traditional view presented in the extant innovation literature that argues that innovation is the product of organizational roles and structures created for the specific

purpose of producing innovation outcomes (e.g. Benner & Tushman, 2002; Ethiraj & Levinthal, 2009; Helfat & Peteraf, 2009; Phelps, 2010; Raisch, Birkinshaw, Probst, & Tushman, 2009; Siggelkow & Levinthal, 2003; Sutcliffe, Sitkin, & Browning, 2000; Tushman et al., 2010; Tushman & O'Reilly, 1999). While the perspective of Howard-Grenville and colleagues (2011) sheds new light on where innovation resides, the questions of how individuals innovate and why individuals produce different types of innovation outcomes remain.

Innovation and language

In seeking answers to these questions I turned to organizational theory studies that focus on the role of individuals in the innovation and organizational change process (see especially Bechky, 2003; Boxenbaum & Battilana, 2005; Hargadon & Bechky, 2006; Howard-Grenville et al., 2011; Reay, Golden-Biddel, & Germann, 2006). A number of organizational change studies use narratives and language to understand how individuals contribute to the production of innovation outcomes. While these papers propose different mechanisms of change (e.g. discourse, sensemaking, improvisation, negotiation, rhetoric, and narrative), each study identifies language as integral to the change process. For example, Bechky (2003) finds that individuals are able to bring about change when they share ideas and talk about solving problems. Boxenbaum and Battilana (2005) and Reay and colleagues (2006) show how external solutions to organizational problems are identified and brought into organizations through language.

These studies, therefore, suggest that innovation outcomes (e.g. new designs and new products; new management systems and new organizational processes) are produced as a result of the language employed by individuals (Bechky 2003; Boxenbaum & Battilana, 2005; Reay et al, 2006). These scholars gain insight into the language that individuals use in the innovation process by analyzing what individuals say when talking about or engaged in innovating.

Looking at language

Adopting this approach, then, I focused on the language that individuals employed to talk about innovating, in order to explore how they innovated and why they

produced different types of innovation outcomes. In the next section I explain how I went about gathering and analyzing individuals' language.

Research Approach

Research setting and design

I chose as my research setting three high-technology ventures from the Pacific North-West of North America that had been publicly recognized as innovative:

FutureSmart is a software firm developed to take advantage of communication technologies that emerged from regulatory changes in the early 2000s. Over the 8 years since its launch, FutureSmart had grown from a three-person idea to a 28-person firm, sought after for its technology innovations. FutureSmart has been the recipient of several awards for being among the fastest growing companies in the Pacific North-West and among the 50 fastest growing companies in Canada.

ParadigmShift is an environmental engineering firm that was officially created in 2008, although the organization was simply the consolidation of one founder's thoughts, research, and prototype development spanning almost a decade. By 2010 the company had 10 full-time employees, and had been profiled in a leading international business journal. ParadigmShift's founders were also invited to sit on an international panel of industry leaders in the field of environmental technology to represent Canada as the creators of a breakthrough clean technology.

GreatInsight is a software development company and a subsidiary of TopCo, one of the world's largest transportation equipment manufacturing firms. GreatInsight was started in 1996 by a small group of software programmers, and acquired by TopCo in 2000 for its breakthrough software products that revolutionized how transportation equipment customers operated their fleets. By 2010 the company had grown to approximately 150 employees. Seventy percent of the company was involved in enhancing software products for TopCo. About 10 percent of the company was engaged in consulting and 20 percent was engaged in organizational administration and support.

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These three organizations represent a theoretical sample because I chose them specifically for their prior and ongoing engagement in innovation (Dougherty & Hardy 1996, Eisenhardt 1989; Hargadon & Bechky, 2006). The organizations were reputed to hire individuals who were then engaged in producing innovation outcomes. I was confident, therefore, that I would be able to find individuals in these organizations that would be able to talk about how they innovated, and about why they produced different types of innovation outcomes (Glaser & Strauss, 1967).

Data collection

I gathered language data through semi-structured interviews in which I asked individuals to tell me about their involvement in innovating in their organizations. I started the interview process in each organization by speaking to the founders and key senior managers. Then, following a snowball sampling method, I asked participants to direct me to other individuals in the organization who were engaged in innovating. I primed each participant by telling him/her that I was studying innovation in high technology firms. I then asked participants to describe how they were involved in innovating in the organization. In each interview, I was interested in how individuals spoke about innovating, rather than the 'facts' relating to the activities themselves.

My final sample contained a total of 32 participants across hierarchical levels in the three organizations. Participant interviews lasted between 1 and 2.5 hours each, giving me a total of over 36 hours of interview data collected over a period of 6 months. The interviews resulted in 584 double-spaced transcribed pages.

An emergent process looking at language, individuals and innovation outcomes

Given that my research question was highly exploratory, I entered the analytic process only with the objective of looking at the language that individuals employed to talk about innovating. I had no *a priori* theoretical perspective or model about how individuals innovated or why they produced different types of innovation outcomes. Therefore, from the start I decided to follow an inductive, interpretative process that involved seeking support for and insight into my findings only if and when I identified

clear patterns in my data. My analysis thus followed an emergent process as I iteratively uncovered patterns in the data and sought insight from the literature.

In constant collaboration with a research assistant, I began with an in-depth analysis of my interview data using a grounded approach (Glaser & Strauss, 1967). Both separately and together, the research assistant and I looked closely at the language individuals employed to talk about innovating. While the content that individuals discussed was important, we noticed patterns in the language – i.e. the words and phrases – that individuals employed when talking about innovating. In other words, we found that *how* individuals described innovating was as interesting as *what* they described.

The language analysis in which my research assistant and I engaged involved rigorously and constantly comparing the language employed in a single transcript, as well as comparing language across transcripts, creating and revising memos, and iteratively building definitions (Miles & Huberman, 1984). Both of us independently analyzed each transcript and assigned codes to words and phrases. We then worked together to share, explain, and compare the codes we had identified and assigned to words and phrases (Barley, 1996). We modified and refined our codes, and then re-coded each transcript. We grouped similar codes into language categories. We managed our codes and categories by building data tables, and code and category definitions. We modified and refined the definitions of codes and categories repeatedly as we went through the analytic process.

We spent more than 300 hours in individual analysis, and more than 50 hours in joint coding (Barley, 1996). Our comparative discussions and analytic memos enabled us to refine our coding process. Following this regimen, we coded 1858 quotations (i.e. words and phrases, and content). Through an iterative process of refining, we assigned 54 codes to the words and phrases used by individuals in their descriptions (e.g. 'absolute', 'correct', 'wrong', 'only one right answer'). We created definitions for each code, which stipulated the conditions under which we would assign the codes to individuals' descriptions (see **Table 2**). I then grouped codes together into categories such that each category contained related language. I also named each category (e.g.

'believes in a single right way'). Finally, I interpreted that each category related to a different aspect of how individuals approached innovating (see **Table 3**).

Next I constructed a table with individuals as columns and the language categories as rows. I found two groups of individuals based on the categories of language present in their transcripts. Based on my above interpretation that the categories related to how individuals approached innovating, I observed that the groups of individuals approached innovating differently. I referred to each group's approach to innovating as its 'innovation orientation'.

Table 2.   *How Individuals Talk about Innovating: Codes, Code Definitions and Categories*

Code	Code definition (rule for assigning code)	Category
Absolute	States something as being universally valid	Believes in a single right way
Correct	Believes this to be the right/ correct way	
Wrong	Believes this to be the wrong way	
Only one right answer	Identifies a single answer/ outcome as right/ correct	
Accepted	Identifies the practice as generally accepted by/ in the industry	Pursues legitimacy
Best practice	Identifies something as 'best practice'	
Industry standard	States that the practice is standardized across all players in the industry	
Proper	States that the practice is performed this way by others in the industry	
Follow	Does what recognized leaders have done	Follows leaders
Benchmark	Assesses/ measures practices and progress relative to recognized leaders	
Model	Identifies practices by leaders as templates/ models to be adopted and followed	
Proven	Says that the practice has been shown by leaders/ authorities to be true/ correct	
Prevent	States goal/ intention/ desire to prevent (failure or outcome)	Driven by fixing and preventing failures
Reduce risk	Mentions reducing or limiting risk	
Avoid	Mentions avoiding or eliminating risk or failure	
Detail focused	Provides details and steps involved in doing task/ job	Focuses on task
Job-specific	Describes tasks and details as related to particular job/ role	
Process	Describes in detail following a clear and given ('known') process	
Must work within	States existing structures, systems and processes as fixed/ bounding what can be done	Works within what already exists
Can't break	States that existing structures, systems and processes cannot be broken/ changed/ replaced	
Choices restricted	States that actions are limited to one or two options	
Measure	Uses metrics and measurements to validate and assess actions	Strives for precision in the form of definition and quantification
Quantitatively determined	Uses statistical tests to ensure precise results	
Justification	Clarifies using precise definitions and specific terminology	
Linear	States that future steps follow past actions in a linear, predictable fashion	Seeks certainty
Known outcome	Explains that actions should have known/ expected outcomes	
Complete	Defines a single, bounded (complete) problem which can/ should be solved using the prescribed, appropriate solution	

Code	Code definition (rule for assigning code)	Category
Flexible	Talks about flexibility when considering solutions	Believes there are many options
Options	Believes there are many possible ways of approaching/ solving a problem	
Don't know	Admits not knowing the answer/ outcome up front	
Figure it out	Describes discovering a solution in the process of solving a problem	
Useful	Talks about usefulness/ describes making things useful	Pursues usefulness and purpose
Relevant	Talks about making things relevant to a problem/ task	
Purposeful	Talks about things having (a) purpose	
Practical	States practicality as a main goals of making changes	
Experience-based	Describes decisions being based on past experience	Learns from experience and failure
Self-reflection	Reflects on/ second-guesses past decisions/ actions	
Learning	Talks about learning by doing/ doing things in order to learn	
Trial and error	Speaks about trying, failing, and trying again until a solution is found	
Seize	Mentions taking advantage of chances that arise	Driven by opportunity
Opportunity	Identifies an idea/ event or chance as an opportunity	
Generate	Talks about actions/ events as generating/ giving rise to new ideas/ chances/ courses of action	
Solution focused	Talks about actions in terms of the solution they offer	Focuses on outcome
Big picture	Speaks about an overall solution (vs components)	
Problem-based	Talks about solving puzzles/ problems (vs tasks)	
Leverage	Talks about using, but going beyond, existing resources	Sees existing resources as launching pads
Work around	Speaks about by-passing or finding alternatives to what currently exists	
Use necessary resources	Talks about cobbling together/ making use of whatever's available/ necessary to make a solution	
Emerging	Explains that new information arises/ emerges as he/ she goes about his/ her work	Adjusts with emerging information
Evolving	Describes changing with new information/ events	
Meandering	States that actions need to accommodate new information in unexpected and non-linear ways	
Play	Says does things for fun or to 'play around'	Seeks possibility
Uncertain	Describes doing things to see what might happen	
Curious	Describes trying things out of curiosity about whether a solution might work/ provide insight/ lead to new ideas	

Table 3.   Grouping Related Codes into Categories, and Category Definitions

Code	Category	Category definition
Absolute Correct Wrong Only one right answer	Believes in a single right way	Relates to an individual's belief in a single way of doing or approaching something that is right or correct
Accepted Best practice Industry standards Proper	Pursues legitimacy	Relates to the appropriateness or legitimacy of actions and processes
Follow Benchmark Model Proven	Follows leaders	Relates to looking to industry leaders for direction, and emulating leaders' actions
Prevent Reduce risk Avoid	Driven by fixing and preventing failures	Relates to identifying failures and being driven to fix and prevent failures

Code	Category	Category definition
Detail focused Job-specific Process	Focuses on task	Relates to the individual's focus on tasks and the function that he/she was hired to perform in the organization
Must work within Can't break Choices restricted	Works within what already exists	Relates to changes taking place within or on top of existing resources
Measure Quantitatively determined Justification	Strives for precision in the form of definition and quantification	Relates to definition and quantification for clarification and precision
Linear Known outcome Complete	Seeks certainty	Relates to being confident that actions will have expected outcomes
Flexible Options Don't know Figure it out	Believes there are many options	Relates to believing that any challenge can be approached from a number of angles and have many possible solutions/ outcomes
Useful Relevant Purposeful Practical	Pursues usefulness and purpose	Relates to doing things that are perceived to be useful or to have purpose
Experience-based Self-reflection Learning Trial and error	Learns from experience and failure	Relates to learning through experience and failure
Seize Opportunity Generate	Driven by opportunity	Relates to pursuing opportunities that emerge and present themselves
Solution focused Big picture Problem-based	Focuses on outcome	Relates to the outcomes (objectives) of the work performed in the organization
Leverage Work around Use necessary resources	Sees existing resources as launching pads	Relates to resources providing opportunities to do new and different things in the future
Emerging Evolving Meandering	Adjusts with emerging information	Relates to changing direction as a result of emerging information and ideas
Play Uncertain Curious	Seeks possibility	Relates to searching for and welcoming possibility

In the next stage of my analysis, I focused on the innovation outcomes in which individuals were engaged in producing. My research assistant and I assigned and developed codes for the innovation activities that individuals talked about in their interviews. We combined these codes into six categories, which we identified as the innovation practices in which individuals engaged (e.g. 'improve', 'extrapolate', 'adapt'). I

discovered that there was a relationship between individuals' innovation orientations and the innovation practices in which they participated.

In addition, my research assistant and I identified 62 innovation outcomes mentioned by the individuals in our sample that they had produced or participated in producing (e.g. 'improved system response,' 'better data availability,' 'new inventory process'). I found a relationship between individuals' orientations, the innovation practices in which they engaged, and the innovation outcomes they produced.

I then turned to the literature to better understand the relationship that emerged between individuals' innovation orientations, the innovation practices in which they engaged, and the innovation outcomes they participated in producing. This understanding enabled me to develop at a theoretical model of how individuals innovate and why they produce different types of innovation outcomes they participate in producing.

Results

The aim of my study was to explore how individuals innovated and why they produced different types of innovation outcomes. After rigorously analyzing the interviews of 32 individuals from three high-technology organizations, I placed individuals into two groups based on the different words and phrases that they employed to talk about innovating. I found that each group of individuals engaged in different types of innovation practices and produced different types of innovation outcomes. Below I provide a detailed explanation of these results.

Language suggests that individuals approach innovating in different ways

My analytic process resulted in the identification of 16 categories of words and phrases that individuals employed to talk about innovating (see refer to **Table 2**). I then sorted these categories into eight contrasting pairs, suggesting contrasting ways in which individuals approached innovating (see **Table 4**).

Table 4. ***Comparative Categories of Language Suggests that Individuals Approach Innovating Differently***

Contrasting Language Categories	
Believes in a single right way	**Believes there are many options**
"the correct communication between the correct people, and … making sure that the orders go out correctly" (Harry) "here are the right courses that a company should take to get the … model going" (Chris) "ensure that our choice was the right choice" (Ian)	"I have to understand, I guess, enough of it to figure out what to look for. I think it's impossible to understand every single thing to know exactly what is going on" (Nathan) "I try to be flexible and try different ways … there are different ways. There's not only one way to tackle a problem." (Evan) "When a … challenge came up … all ideas on the table ... any idea is a good one. If anyone has an idea, speak up" (Isaac) "let's just figure out what the heck we can do to make this work" (Robert)
Pursues legitimacy	**Pursues usefulness and purpose**
"the industry standard" (Harry) "trying to instill best practices onto the team. Trying to push the company to change their process from something very ad hoc to something that's more well adopted in the [software] community" (Chris) "I would compare it as if friends from previous companies would do it, how would they do it?" (Sam) "A normal business … would not be sitting with just 10% of its opportunities identified for next year" (Rick) "If other people are doing it, then it makes sense for us to go ahead and do it too" (Sam)	"I find that tank levels and some of the monitoring, visual data that's there, reading numbers are tough, but having graphic or representation makes it a lot easier" (Nathan) "I took this design document and converted it to something useful for [our] purposes … This was a type of document, or an approach, that was not standard, let's say. It was ad hoc development to fit a purpose, to fit a new need, and help the team to test faster and more effective." (Evan) "It's really not worth our time … There's no purpose to it. We're building interesting technology, but it's not purposeful." (Glen)
Follows leaders	**Learns from experience and failure**
"We look at those companies … Amazon, Google, Yahoo …That's pretty big for me." "[This] framework has surfaced over the past three or four years, and some of them have become fairly mature, other huge companies have started adopting them, Yahoo and so forth. So we've started looking into doing some R & D work" (Ian) "… real gigantic SAP style manufacturing management processor …[is] what we needed to achieve" (Harry)	"we had our bumps in terms of quality and things like that …we were learning" (Nigel) "We spent a lot of time, a lot of trial and error, to try and figure out how to make good [components]" (Hayden) "the path that we followed … has helped us generate all sorts of know-how ... we needed that learning. We need to become experts in designing and building these things. And we needed to fail. If we didn't … we wouldn't have that trail behind us" (Wayne)
Driven by fixing and preventing failures	**Driven by opportunity**
"the sign of an intelligent organization is that if [a] problem happens again, we've put the infrastructure in place such that it wouldn't affect us. And if it does, then shame on us for not learning the lesson the first time" (Harry) "We want to make sure that we put all these preventative measures" (Ian)	"So there's potential that 2017 there can be a huge opportunity for us, if we can get this right. We get in there, we learn about the [client's] systems, become the experts. Why wouldn't we?" (Rowena) "If not us, then who? If we don't do it, shame on us" (Glen) "here's our window" (Owen)

Contrasting Language Categories	
Focuses on task	**Focuses on outcome**
"I was hired … to take over the day-to-day program management … Helping resolve issues, getting involved in feature design … That's what they hired me to do" (Ralph) "I do … a data service ... We process data for TopCo … We index it and handle the graphics for web viewing … I have a couple of managers who run that." (Zack) "I look after... the continuous improvement side …We've got a project management practice … a business analysis practice, software engineering practice ... technical writing group, and testing and quality control group." (Dale)	"I reconfigured it so it is very easy to get the useful data out of it for controls." (Nathan) "It wasn't perfect but it was successful, like that they combined" (Gerry) "I figured it was easier to have this system in place, rather than emailing back and forth" (Nell)
Works within what already exists	**Sees existing resources as launching pads**
"we have to work within an environment where we risk … breaking something … if we change the way something works." (Ralph) "I came on board to basically … start building on top of what had already been implemented in the first place … my role has been to be involved in a lot of design discussions [to determine] … will that fit our current architecture?" (Ian) "I said, 'no, this is not how our system is going to be because this is not the way we do the system.'" (Victor)	"We kept trying to work with the existing design that we had come up with, and then eventually decided it was time to throw it away and redesign" (Wayne) "We know we've got talented people here that have that expertise ... We can leverage their expertise. And these people are subject matter experts within operations. We'll draw upon their skill" (Rowena) "We have expertise in the [communication] platform because we built that for the [commercial] product … We'll get to market by taking what we did for [CompanyA] and repackaging it for this market. So we said, "… What do we need to modify in the application?" (Glen)
Strives for precision in the form of definition and quantification	**Adjusts with emerging information**
"when will we need to hire a new person, or what customers … need to be fired as customers because for every device they sell, they generate 10 support calls. This is the kind of thing we now can measure and act on, whereas in the past it was all just anecdotal rather than empirical" (Harry) "And by system requirements, I mean communicating the end customer's minimum set of features and services that will determine their buying decision" (Ralph)	"the one thing that we knew was that we didn't know what was going to happen" (Glen) "No idea if they're going to be deployed ... We don't know. We just do not know if it will exist" (Rowena) "we didn't plan for a … sensor ... Later on … we figured that would be very useful and we added one in" (Nathan) "I'm guided by the problems that I'm finding down the road" (Evan)
Seeks certainty	**Seeks possibility**
"Because you don't want something that is fairly new in the market and hasn't been proven" (Ian) "[I]t's not always good to be cutting edge. We use operating systems and platforms that are stable" (Victor) "I knew that there were proven models to do this" (Chris)	"I truly believe that's possible - difficult but possible." (Ivan) "I wanted to try it, like "what could happen? Like, can we run it to high, the higher [setting], and then why not?" We just decided to try it." (Gerry) "someone would come into work with an idea saying, "… why don't we try this?" We'd roundtable it, we'd whiteboard it … 'sure, let's do it.' Try and poke holes into it, and if seemed like a good idea then we would go ahead and do it." (Isaac)

'Believes in a single right way' vs. 'Believes there are many options'

In their interviews, many individuals mentioned the 'right way' and 'correct way' to do things in relation to innovating in the organization. For example, Harry, a senior manager at FutureSmart, explained how he helped to establish "the correct communication between the correct people, and … making sure that the orders go out correctly." Similarly, Chris, a team leader at FutureSmart, described making preparations to improve the organization's product development process in this way: "[H]ere are the right courses that a company should take to get the … model going." Ian, another team leader at FutureSmart, described his thought process around changing the organization's tools in terms of "[ensuring] that our choice was the right choice."

In contrast to language that indicated a belief in a single 'right' way, other individuals employed words and language that revealed they believed that any challenge had many possible solutions. Evan, a senior manager at FutureSmart, illustrated this when he said,

> *I try to be flexible and try different ways … there are different ways.*
> *There's not only one way to tackle a problem.*

Similarly, Isaac, a founder of ParadigmShift, explained,

> *When a … challenge came up … all ideas on the table ... any idea is a*
> *good one. If anyone has an idea, speak up.*

Nathan, a software engineer at ParadigmShift, demonstrated through his choice of words his belief that there were many ways to approach a situation when he said,

> *I have to understand, I guess, enough of it to figure out what to look for. I*
> *think it's impossible to understand every single thing to know exactly what*
> *is going on.*

Along the same lines, Robert, a senior executive at GreatInsight, did not reference a known, 'right' way of proceeding, but instead said: "[L]et's just figure out what the heck we can do to make this work."

'Pursues legitimacy' vs. 'Pursues usefulness and purpose'

Several individuals employed words and phrases relating to the appropriateness or legitimacy of actions and processes – whether performed by themselves or by the organization. For example, Chris described the new process he introduced as being driven by his desire to:

> … instill best practices onto the team … Trying to push the company to change their process from something very ad hoc to something that's more well adopted in the [software] community.

Revealing his own pursuit of legitimacy, Chris's boss, Sam, then evaluated the appropriateness of the process Chris wanted to introduce: "I would also compare it as if friends from previous companies would do it, how would they do it?"

In contrast to language around doing what was expected or legitimate, many individuals spoke of doing things that were useful or purposeful. Evan, for instance, illustrated this when he said,

> I took this design document and converted it to something useful for [our] purposes … This was a type of document, or an approach, that was not standard, let's say. It was ad hoc development to fit a purpose, to fit a new need, and help the team to test faster and more effective.

Nathan also indicated a focus on purpose when he said,

> I find that tank levels and some of the monitoring, visual data that's there, reading numbers are tough, but having graphical representation makes it a lot easier.

The same focus can be seen when Glen, a co-founder of FutureSmart, when he exclaimed: "It's really not worth our time … There's no purpose to it. We're building interesting technology, but it's not purposeful."

'Follows leaders' vs. 'Learns from experience and failure'

Repeated phrases employed by a number of individuals indicated that they looked to industry leaders for direction, and then emulated leaders' actions. Sam, for

example, explained: "We look at those companies … Amazon, Google, Yahoo … That's pretty big for me." With respect to making changes to the organization's tools, Ian said,

> *[This] framework has surfaced over the past 3 or 4 years, and some of them have become fairly mature, other huge companies have started adopting them, Yahoo and so forth. So we've started looking into doing some R & D work …*

Similarly, when Harry helped develop a new fulfillment process, he made reference to "…a real gigantic SAP style manufacturing management processor …[that's] what we needed to achieve."

In contrast to descriptions around following leaders, other individuals described learning through experience. Hayden, an engineering technologist at ParadigmShift, demonstrated this when he said: "We spent a lot of time, a lot of trial and error, to try and figure out how to make good [mechanisms]." His boss, Wayne, a co-founder of ParadigmShift illustrated learning from experience and failure when he explained:

> *[T]he path that we followed, and the learning that we've established, has helped us generate all sorts of know-how … And we needed that learning. We need to become experts in designing and building these things. And we needed to fail. If we didn't, and somebody has taught us how to do it, we wouldn't have that trail behind us …*

Nigel, a senior executive at GreatInsight, also discussed that learning came from experience and failure when he said: "[W]e had our bumps in terms of quality and things like that …we were learning."

'Driven by fixing and preventing failures' vs. 'Driven by opportunity'

Numerous individuals referred to failures, and identified being driven to fix and prevent them. For example, Harry explained that:

> *[T]he sign of an intelligent organization is that if [a] problem happens again, we've put the infrastructure in place such that it wouldn't affect us. And if it does, then shame on us for not learning the lesson the first time …*

Similarly, Ian's statement, "We want to make sure that we put all these preventative measures", indicated his desire to avoid failure. Rick, a senior leader at GreatInsight, a software development subsidiary of a leading multinational transportation equipment manufacturer, exhibited the same focus on failure and a desire to prevent it when he said,

> … when you look ... at what you produce and the issues you have from what you produce, it gives you an indication of some of the shortfalls you may have.

Counter to descriptions that indicated being driven by fixing and preventing failures, numerous individuals described being driven to pursue emerging opportunities. This was exemplified by Rowena, a senior leader at GreatInsight, who said,

> So there's potential that 2017 there can be a huge opportunity for us, if we can get this right. We get in there, we learn about the [client's] systems, become the experts. Why wouldn't we?

Glen and Owen, co-founders and senior executives of FutureSmart, also demonstrated being driven by opportunity when they said: "That's what's led to the [consumer product] discussion. If not us, then who? And if we don't do it, then shame on us" (Glen), and "[H]ere's our window" (Owen).

'Focuses on task' vs. 'Focuses on outcome'

Numerous transcripts contained words and phrases explaining the specific tasks on which individuals focused, relating to the function that they were hired to perform in the organization. Ralph, the product director at FutureSmart, explained:

> The reason I was hired … was to take over the day-to-day program management … Helping resolve issues, getting involved in feature design … That's what product managers do … That's what they hired me to do.

Similary, Zack, a senior leader at GreatInsight, described the tasks he focused on in this way:

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> *I do … a data service ... We process data for TopCo … We index it and handle the graphics for web viewing … I have a couple of managers who run that.*

In contrast to descriptions that focused on the detail of tasks related to the functions for which individuals were hired, statements in other transcripts focused on the outcomes of the work that individuals performed in the organization. For example, Nathan did not explain how the work he did related to his role as a software engineer, or to his job description, but rather explained the outcome of this work: "I reconfigured [the interface] so it is very easy to get the useful data out of it for controls." Similarly, Gerry, a hardware engineer at ParadigmShift, who did not provide any details of the engineering tasks he performed when developing a new way to make mechanical components, talked rather about the outcome of the development process: "It wasn't perfect but it was successful, like that they combined." Another example is provided by Nell, who said, "I figured it was easier to have this system in place, rather than emailing back and forth," but did not describe the tasks she performed to get to this outcome, nor how these tasks aligned with the job for which she was hired.

'Works within what already exists' vs. 'Sees existing resources as launching pads'

Several individuals discussed how the systems (or infrastructure), practices and processes – what these individuals referred to as 'resources' – created a boundary around the changes that could be introduced in the organization. These individuals implied that change was required to take place within or on top of existing resources. Ralph, for example, said: "[W]e have to work within an environment where we risk … breaking something … if we change the way something works." Victor, a technical manager at FutureSmart added: "I said, '[N]o, this is not how our system is going to be because this is not the way we do the system.'"

Ian further illustrated the view that new ideas had to build on existing resources when he said,

> *I came on board to basically … start building on top of what had already been implemented in the first place … my role has been to be involved in a lot of design discussions [to determine] … will that fit our current architecture?*

Unlike language that described resources as constraints within which to work, the words and phrases in other transcripts described how individuals considered organizational knowledge and skills as resources that provided them with the opportunity to do new and different things. These individuals spoke about current resources as launching pads for future activities. Rowena illustrated that she was not bounded by what currently existed in the organization, but that knowledge within the organization would enable her to develop a new service offering at GreatInsight when she said,

> *We know we've got talented people here that have that expertise ... We can leverage their expertise. And these people are subject matter experts within operations. We'll draw upon their skill …*

Similarly, Glen explained how his idea for a new product made use of, but was not limited by, what already existed in FutureSmart:

> *We have expertise in the [communication] platform because we built that for the [commercial] product … We'll get to market by taking what we did for [Company A] and repackaging it for this market. So we said, "… What do we need to modify in the application?"*

'Strives for precision in the form of definition and quantification' vs. 'Adjusts with emerging information'

Many individuals defined and quantified the concepts they discussed. Through definition and quantification these individuals were clear and precise in their descriptions. For example, to ensure clarity with respect to the system requirements he mentioned, Ralph explained: "And by system requirements, I mean communicating the end customer's minimum set of features and services that will determine their buying decision." Harry illustrated that quantification enabled him to know precisely when to take action:

> *[When] will we need to hire a new person, or what customers … need to be fired as customers because for every device they sell, they generate 10 support calls … This is the kind of thing we now can measure and act on, whereas in the past it was all just anecdotal rather than empirical …*

Contrary to this precise and defining language, other individuals described a fluid environment of emerging information and ideas, using words that were correspondingly

broad and vague. For example, Glen explained that when he led FutureSmart's development of a new product offering, "[T]he one thing that we knew was that we didn't know what was going to happen." In Rowena's discussion of the new service offering she was developing at GreatInsight she admitted: "No idea if they're going to be deployed ... We don't know. We just do not know if it will exist."

Nathan explained, without defining how, why or what precisely he did, that, "[W]e didn't plan for a … sensor ... Later on … we figured that would be very useful and we added one in," indicating that emerging information guided his decision to build a new feature into the system. Evan further illustrated how he adjusted to new and emerging information when he stated: "I'm guided by the problems that I'm finding down the road."

'Seeks certainty' vs. 'Seeks possibility'

In their choice of words and language, numerous individuals explained the importance of certainty and of being confident that actions would have expected outcomes. For example, Ian explained: "[Y]ou don't want something that is fairly new in the market and hasn't been proven," and Victor echoed, "[I]t's not always good to be cutting edge. We use operating systems and platforms that are stable."

Finally, in contrast to statements that describe a focus on certainty, descriptions by other individuals revealed a search for and welcoming of possibility. Ivan, a senior project manager at GreatInsight illustrated the use of words and phrases indicating search for and acceptance of possibility in his statement: "I truly believe that's possible - difficult but possible." Gerry demonstrated seeking and accepting possibility when he said,

> I wanted to try it, like "What could happen? Like, can we run it to high, the higher [setting], and then why not?" We just decided to try it.

Isaac, co-founder and senior executive of ParadigmShift, also described focusing on possibility when he said,

> [S]omeone would come into work with an idea saying, "… why don't we try this?" We'd roundtable it, we'd whiteboard it … 'Sure, let's do it.' Try and poke holes into it, and if it seemed like a good idea then we would go ahead and do it.

Two groups who approach innovating differently

In order to compare how the individuals in my study approached innovating, I constructed a table with individuals as columns and the language categories as rows. I imagined that different innovating individuals would exhibit different combinations of language categories. However, when I looked at the language categories across individuals, I found only two combinations of language categories. In other words, individuals fell into two clearly distinct and mutually exclusive groups with respect to the combinations of language categories present in their transcripts (see **Table 5**).

Because I had interpreted the language categories as relating to different ways that individuals approached innovating, these results suggested that each group of individuals approached innovating differently. I referred to each group's distinct approach to innovating as its 'innovation orientation'. My findings, thus, suggested that individuals in one group had a different innovation orientation from individuals in the other group.

I observed that individuals in the first group – who spoke about doing things according to a single 'right' way, pursuing legitimacy, following leading organizations in their industry, fixing and preventing failures, precision, tasks, about working within what already existed, and about seeking certainty – spoke normatively (Anderson & Moore, 1957) about what *should be* done when it came to innovating. As a result, I labelled these individuals as having a *should-be* innovation orientation and referred to individuals in this group as *should-be* individuals.

I observed that individuals in the second group – who spoke about many options, pursuing usefulness and purpose, learning from experience and failures, about opportunities and possibilities, of using existing resources as launching pads, and about adjusting to emerging information – spoke descriptively (Anderson & Moore, 1957) about what *could be* done when it came to innovating. As a result, I labelled this group of individuals as having a *could-be* innovation orientation; and referred to individuals of this group as *could-be* individuals.

Table 5.   *Patterns in Individuals' Language Use*

Language Category	FutureSmart											ParadigmShift							GreatInsight														
	Ian	Victor	Chris	Sam	Harry	Ralph	Hal	Nell	Glen	Evan	Owen	Hayden	Gerry	Nathan	Gill	Noel	Wayne	Isaac	Sarah	Rick	Ingrid	Dale	Ethan	Zach	Nate	Robert	Rowena	Ivan	Tom	Nigel	Amy	Liam
Believes in a single right way	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Believes there are many options								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Pursues legitimacy	X	X	X	X	X	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Pursues usefulness and purpose							X	X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Follows leaders	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Learns from experience and failure								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Driven by fixing and preventing failures	X	X	X	X	X	X	X												X	X	X	X	X									
Driven by opportunity								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Focuses on task	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Focuses on outcome								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Works within what already exists	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Sees existing resources as launching pads								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Strives for precision in the form of definition and quantification	X	X	X	X	X	X	X												X	X	X	X	X									
Adjusts with emerging information								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Seeks certainty	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X	X	X	X	X	X							
Seeks possibility								X	X	X	X	X	X	X	X	X	X	X								X	X	X	X	X	X	X
Innovation orientation	S	S	S	S	S	S	S	S	C	C	C	C	C	C	C	C	C	C	S	S	S	S	S	S	S	S	C	C	C	C	C	C

Note.   S=*should-be* innovation orientation; C=*could-be* innovation orientation

Innovation orientations, practices and outcomes

Next we looked at and coded the innovation practices in which individuals engaged (see **Table 6**).

Table 6.   Codes for Different Types of Innovation Practices

Innovation practice code	Definition (rule for assigning code)
Improve	Describes improving the performance of organizational processes and systems
Extrapolate	Discusses making changes based on projections forward in time – i.e. extrapolations - of existing systems and processes
Adapt	Explains adapting current processes and systems in line with legitimate external processes and systems
Recombine	Describes using organizational resources in new, novel combinations
Link old with new	Mentions linking new ideas/ techologies/ opportunities with existing resources
Start from scratch	Describes discarding what exists and starting over

We also developed codes for the types of innovation outcomes that individuals participated in producing (see **Table 7**).

Table 7.   Codes for Different Types of Innovation Outcomes

Innovation outcome code	Definition (rule for assigning code)
Incremental innovation	Outcome modifies or revises existing products/ processes but doesn't disrupt or replace existing products/ processes
Radical innovation	Outcomes is a new product/ process that doesn't exist anywhere else because it is designed specifically for the organization and is new/ unique to the firm and new to the world

I found a relationship between individuals' innovation orientations, the practices in which individuals engaged, and the innovation outcomes individuals participated in producing (see **Table 8**).

Table 8. **The Relationship between Innovation Orientations, Innovation Practices and Innovation Outcomes**

Orientation	Individual	Language used	Practice	Innovation outcome	Innovation type
SHOULD-BE	Harry	We have a very robust … monitoring and alerting system … for detecting problems and we monitor literally hundreds of processes across our production systems … to give us immediate notification if anything goes wrong.	Improve	monitoring & alerting system	INCREMENTAL INNOVATION
	Harry	We should be looking at moving to this new version of a database server because it's going to provide us with the ability to do whatever. And that will prevent the following problems	Extrapolate	new version	
	Rick	We introduced this process which was the GreatInsight Business Acquisition Process, GBAP, based on what we do [in another business unit], that shows how you prosecute opportunities and manage that	Adapt	opportunity management process	
	Dale	[A matrix structure is] normally a good instrument for use when you've got a large project or a program where you really want to make sure that all the players know how they're playing with each of the phases, components, deliverables of the program		formal organizational structure	
	Ian	We decided to adopt [a true PHP/MVC framework one] and basically we took the one that...least impacted [our existing system]		development tool	
	Chris	We all knew that [this process] was best practice...I'm trying to push the company to change their process from something that was very ad hoc to something that's more well adopted in the...community		development process	

Orientation	Individual	Language used	Practice	Innovation outcome	Innovation type
COULD-BE	Nathan	Having graphical representation makes it a lot easier ... it's not exactly rebuilding the entire system, but adding more ... changing some of the layers	Recombine	user interface	RADICAL INNOVATION
	Evan	I went for [an existing tool] ... [and] developed it to be used at a company level		testing tool	
	Nell	I came up with this colour coding system. I rank it according to priority, these orders, and then I also colour code it		authorization process	
	Glen	We had all of that technology built ...Then you couple that with the absolute dramatic rise in services being available on … smart phones - the rise of the iPhone ... that becomes the *de facto* platform for [a new] service	Link old with new	new platform	
	Rowena	The fundamental foundation of everything, is the customer relationship ... we have our consultants ... We can leverage their expertise. And these people are subject matter experts within operations. We'll draw upon their skill ... And eventually they begin to understand about the solutions.		consulting service	
	Wayne	But now we're working on a hybrid [device] … our [device] can be configured to [for markets]...whereas our competitor's cannot		hybrid product	
	Owen	There's the red team and the blue team and those are the colours of FutureSmart … you've got to separate them enough that there's focus, yet not separate them enough that there is division … There are going to be different goals and rewards and objectives		new management structure	
	Isaac	Another thing we tried was a clear [device]. The idea was that if it were transparent, we could see what was going on inside. Bolted a few pieces of clear plastic together and made some transparent [tools], then used food colouring. By adding food colouring … we could see [what was going on]		testing process	
	Wayne	We worked away [on a small prototype] doing more experiments, designing a bigger one... Lots of failures...I thought we understood...how to scale it up, because it seemed quite simple, but it wasn't ... then eventually decided it was time to throw it away and redesign.	Start from scratch	new device	
	Hayden	We spent a lot of our time, pouring a lot of our time and our effort into making good [tools]. That's what we figured was the problem. [The problem was because of the tools]...We figured out and solved [the problem], got the design established and patented and put down		new tool design	

Should-be individuals produce incremental innovations by improving, extrapolating and adapting

I found that, when it came to innovating, the individuals in my study with a _should-be_ innovation orientation spoke about engaging in practices relating to improvement, extrapolation and adaptation.

Numerous _should-be_ individuals described improving the performance of organizational processes and systems. Harry, for example, illustrated making improvements when he explained:

> _[W]e had no monitoring or alerting systems to alert us of any IT problems … [now] we have a very robust … monitoring and alerting system … which also provides historical reporting as well, but we primarily use it for detecting problems and we monitor literally hundreds of processes across our production systems at this point to give us immediate notification if anything goes wrong._

Many _should-be_ participants described taking into account what already existed in the organization, and making changes based on projections forward in time – i.e. extrapolations – as to what might go wrong in the future. Harry, explained that he extrapolated when he said,

> _[W]e should be looking at moving to this new version of a database server because it's going to provide us with the ability to do whatever. And that will prevent the following problems …_

Should-be individuals also described adapting the organization's current processes and systems in line with legitimate external processes and systems that applied to, or were compatible with, existing resources. Chris illustrated how he argued to adapt the organization's processes to a more accepted way of doing things when he said,

> _We all knew that [this process] was best practice...I'm trying to push the company to change their process from something that was very ad hoc to something that's more well adopted in the ... community …_

The monitoring solution introduced by Harry improved FutureSmart's existing systems, as did the new version of the server he put in place. Therefore, Harry, an

exemplary *should-be*, introduced an *improved process* to the organization. By adapting the organization's existing processes to align with an externally legitimated product development process, Chris led and participated in the introduction of a formal process that moved the organization forward. Improvement, adaptation and extrapolation practices, therefore, introduced new things and ways of doing things to the organization, but did not disrupt the processes and systems already in the organization. Therefore, I interpreted the innovation outcomes that *should-be* individuals participated in producing were aligned with what the innovation literature defines as incremental innovation (Benner & Tushman, 2003; Tushman & O'Reilly, 1996).

Could-be individuals produce radical innovations by recombining, linking old with new and starting from scratch

I also found that, when it came to innovating, the individuals in my study with a *could-be* innovation orientation spoke about engaging in practices related to recombination, linking old with new and starting from scratch.

Could-be individuals described using organizational resources in new combinations to produce new products and services, and new systems and process. Nathan illustrated how he took what existed in the organization, but recombined the elements to help achieve something new when he said,

> [H]aving graphical representation makes it a lot easier ... it's not exactly rebuilding the entire system, but adding more ... changing some of the layers …

Several *could-be* participants mentioned new ideas that were not obviously connected to the organization in any way. These were not the new versions of existing software systems (as described above by Harry), or better, more legitimate processes followed by competitors (as described above by Chris). Rather, these were new ideas that individuals linked to existing firm resources to generate new products and services, or processes and systems. Glen, a founder at FutureSmart, illustrated:

> We looked at the market and said "What markets will demand a [consumer] product?" Of course you can identify a million markets … Then we said, "Where do we have expertise? We have expertise in the [smartphone] platform because we built that [already]" … We need to leverage some of the web 2.0 type technologies that are out there for

interaction, which meant that we needed to use a different software platform for it ...

A number of *could-be* individuals described how introducing new products or doing things in new ways required starting over. Nell described how she participated in creating something from nothing when she developed a new process that allowed her to track shipments and systematize decision-making:

> *Before we had no concept of keeping track of things ... We used to use just our VPN. But because the VPN is so slow … [the shipping manager] didn't really know what changes were happening, from one minute to the other. We decided to use [a free service, and] I came up with this colour coding system. I rank [these orders] according to priority and then I also colour code it – [for example]: "This customer has terms with us so we don't need to charge a credit card. This can ship right away. You don't have to ask me. Or, if we have to hold off until the credit card gets approved, before you can ship."*

Through recombination, linking old with new, and starting from scratch, *could-be* individuals participated in the introduction of *new products/ services, or new ways of doing things that do not exist anywhere else* because they were designed specifically for the organization. For example, Nathan's user interface was new and unique to ParadigmShift. The outcomes produced through recombination, linking old with new, and starting from scratch, thus, were both new to the firm and new to the world. In their transcripts, participants explained that the production of these outcomes often required the abandonment of some or all of the organization's existing processes and systems, or the implementation of new processes and systems. As a result, I interpreted the outcomes that *could-be* individuals participated in producing were aligned with what the innovation literature defines as radical innovation (Benner & Tushman, 2003; Henderson & Clark, 1990; Tushman & O'Reilly, 1996).

Discussion

In this study I sought to explore how individuals innovate and why they participated in producing different types of innovation outcomes by looking at the language individuals employed when speaking about innovating. I found a relationship

between how individuals approached innovating (i.e. their innovation orientation), the innovation practices in which they engaged, and the types of innovation outcomes they participated in producing (see **Figure 2**).

Figure 2. ***Theoretical Model of How Individuals Innovate and Produce Different Types of Innovation Outcomes***

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│   ┌──────────────┐      ┌──────────────┐      ┌──────────────┐     │
│   │  Innovation  │ ──▸  │  Innovation  │ ──▸  │  Innovation  │     │
│   │ orientation  │      │  practices   │      │   outcomes   │     │
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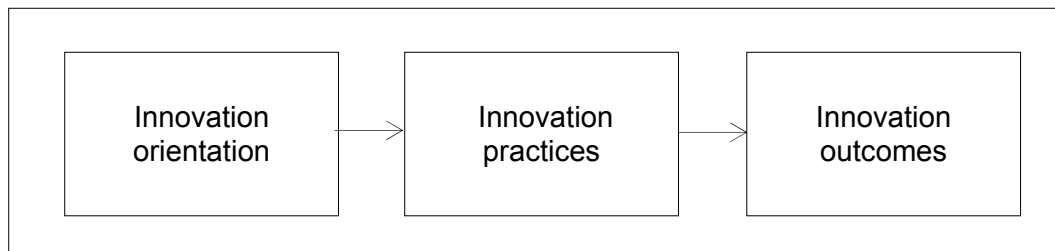
I therefore propose that there are two groups of individuals with distinct approaches to innovation, or 'innovation orientations'. Individuals with a *should-be* orientation identify failures that they believe need to be improved, external processes that should be adapted, or internal processes that need to be extrapolated through alignment with industry best practice. *Should-be* individuals participate in the production of incremental innovation outcomes.

On the other hand, individuals with a *could-be* orientation identify opportunities to recombine resources, to link new ideas with what already exists, and to start from scratch. *Could-be* individuals participate in the creation of radical innovation outcomes.

My results echo those of Howard-Grenville and her colleagues (2011), which show how individuals produce innovation as part of their "everyday actions" (p.523). Therefore, in answer to the question: *How do individuals innovate?*, I propose that individuals innovate by engaging in innovation practices related to their innovation orientations. In response to the question: *Why do individuals produce different types of innovation outcomes?*, I suggest that the innovation outcomes that individuals participate in producing are related to individuals' innovation orientations and the innovation practices in which individuals engage.

Individuals, not roles or structures

The innovation literature suggests that incremental and radical outcomes are produced by organizations because of organizational structures, like R&D and product development departments (March, 1991; Phelps, 2010; Tushman & O'Reilly, 1999; Tushman et al., 2010) in which expenditures are allocated specifically to the production of predefined types of innovation outcomes (Ethiraj & Levinthal, 2009; Helfat & Peteraf, 2009; Siggelkow & Levinthal, 2003; Sutcliffe et al., 2000; Tushman et al., 2010; Tushman & O'Reilly, 1999). However, I did not find that the outcomes that individuals participated in producing could be solely explained by individuals' roles or positions with 'innovation' structures.

Instead, I found that the outcomes that individuals participated in producing were related to their innovation orientations. Numerous individuals held 'innovation' positions like marketing, product development and R&D. The literature suggests that individuals in these roles participate in producing radical innovations (Tushman & O'Reilly, 1996). However, four of the six individuals in my study who held positions in marketing, product development and R&D had a *should-be* innovation orientation and produced incremental innovation outcomes (see **Table 9**). Three of the five individuals who held administrative positions – to which the literature would ascribe incremental innovations – had a *could-be* innovation orientation and produced radical innovation outcomes.

I also did not find that innovation practices or innovation outcomes were aligned to individuals' rank in the organization. I found technicians (e.g. Hayden) and junior staff (e.g. Gill) to be as capable of producing and likely to produce innovation outcomes as founders (e.g. Glen, Owen, Wayne, Isaac).

This suggests that attending to the individuals involved in the innovation process might help strategy and innovation researchers explain the variance between innovation output and performance between firms with ostensibly similar organizational structures.

Table 9. ***Distribution of Innovation Orientations across Organizational Roles and Rank***

Role	Should-Be	Could-Be	Total
Business	8	13	21
Technical	6	5	11
	14	18	32

Note.   Pearson Chi-Square: 0.794 (not significant)

Level	Should-Be	Could-Be	Total
Executive/Founder	1	7	8
Senior Manager	7	5	12
Employee	6	6	12
	14	18	32

Note.   Pearson Chi-Square: 4.404 (not significant)

Furthermore, I did not find evidence that innovation orientations or outcomes were the result of education or training. My analysis indicated that individuals with similar education and backgrounds had different orientations. Leaders, managers and employees across the organizations in my study often shared similar job titles and job descriptions, as well as similar technical and professional training. For example, Nathan (*could-be*), Chris (*should-be*) and Ian (*should-be*) were similarly trained software engineers; Glen (*could-be*) and Ralph (*should-be*) were certified product developers; and Rowena (*could-be*) and Dale (*should-be*) were certified product managers. All participants in my study were recommended by colleagues and superiors as proficient in their respective fields. These results indicate, then, that individuals' orientations, and the outcomes that they participate in producing as a result of the practices they engage in because of their orientations, are not acquired through training.

In summary, my study suggests that innovation is an "active endeavor" (Dyer, Gregersen, & Christensen, 2008: 335) by individuals who participate in producing distinguishably different outcomes, not as a result of the structures in which they work,

their rank in the organization, or training, but as a result of their innovation orientations and the practices in which they engage as a result of their innovation orientations.

Implications for practice

I argue that attending to the preferences, strengths, and contributions of *should-be* and *could-be* individuals has implications for employee morale and organizational innovation success.

S*hould-be* individuals most comfortably perform tasks that need precision, need to be done 'right' and with minimal (preferably zero) error (see Weick & Roberts, 1993), e.g. managing server availability. For example, Harry, who spoke focusing on "true, structured processes" and accuracy, and Ralph, who described taking actions that he could "prove … led to better products", both described themselves as being most comfortable in situations where they were given required, detailed specifications, and were measured according to achievement of stated goals. Sam illustrated his discomfort with emerging situations that had no defined objectives or goals:

> [I]t gets too exciting sometimes I feel ... I'm not really into this whole ... company strategy thing … I feel … I provide more value on the technical side. That's where I get to earn my keep. When the company is planning for the future and start talking about potential markets and all these things, I'm always thinking, "OK, what do I need to do? What does my team need to do to go and provide for that?"

As outlined in my analysis, *should-be* employees enthusiastically engage in improving and extending systems and processes that currently exist, anticipating problems with these systems and processes, implementing adaptations in line with industry standards, and ensuring that proven frameworks are applied and that recognized metrics were adopted. However, *should-be* individuals become frustrated when they were expected to conceptualize and build systems and processes that do not currently exist. Solutions to problems that circumvent or replac existing systems and process are considered failures by *should-be* individuals. For example, Ralph considered FutureSmart's introduction of new technology to resolve a customer issue to be tantamount to "falling on its sword" and "buying our way out of the problem."

On the other hand, individuals with a *could-be* orientation are most comfortable in positions involving rapid change, where their skills in linking diverse bits of information and making decisions without precedent, are considered assets. *Could-be* individuals thrive in positions where they have freedom with respect to how they approach their tasks. However, *could-be* individuals grow frustrated in roles where they are required to work purely within the confines of existing systems and processes, where they were given non-negotiable objectives or specifications, or where they were unable to build useful or purposeful solutions. For example, Tom explained:

> *I wish I didn't have to deal with that sort of thing, but in my position it's to be expected … We're struggling to get what we need to do a good development job. Our preferred mode of operation is to manage things from top to bottom, but that's becoming more and more difficult because [the customer] wants … to send all the development work to the cheapest possible place they can find, which is not here …*

Could-be employees enthusiastically approach tasks related to solving problems creatively. *Could-be* individuals, like Wayne and Isaac, excel in positions that give them broad scope for developing and advancing new ideas, and for considering multiple, often crazy ideas that had the possibility for great success. As a result, managers are advised to be aware of the negative consequences of expecting outcomes that are misaligned with individuals' innovation orientations. Individuals who are tasked with innovation objectives that do not align with their orientations will be unable to meet innovation expectations, and this might negatively impact the development of innovations in the organization. I propose that aligning organizational structures, roles (Tushman & O'Reilly, 1996), support mechanisms (Amabile & Khaire, 2008; George, 2007; Raisch et al., 2009) and predefined innovation objectives with individuals' innovation orientations will facilitate the production of innovation outcomes. Although my study does not test this, I theorize that when organizations successfully produce pre-defined types of innovation outcomes they do so because they have aligned innovation expectations, support for individuals' preference, and reward for individuals' performance with individuals' innovation orientations.

Conclusion

In this paper I set out to answer the following research questions: 'How do individuals innovate?' and 'Why do they produce different types of innovation outcomes?' Through an inductive process of analyzing and categorizing how individuals talk about innovating, I found that there are two groups of individuals. These two groups of individuals talk about and approach innovating differently. In other words, these two groups of individuals have different orientations towards innovations. The innovation activities in which individuals engage and the innovation outcomes that they produce are related to individuals' innovation orientations. Individuals' innovation orientations are largely independent of structure, roles, training, and organizational innovation objectives.

My study adds to the literature on strategy and innovation by potentially explaining the variance in innovation performance between organizations with similar innovation expenditure, structures and roles. I argue that instead of simply creating more 'innovation' divisions, that organizational leaders wanting to improve innovation performance should align innovation expectations and financial incentives with individuals' innovation orientations.

Chapter 3.

Motivation to Innovate:
Why Do Individuals Engage in Innovation?

When I asked Ralph[3], the product development director at the communication application start-up, FutureSmart, about innovating, he explained that he developed new products when customers explicitly stated the need for a different product:

> *Innovation occurs when the demand side talks to the supply side. In our case … the demand end is an end customer talking to one of our dealers.*

When I posed the same question to Glen, the co-founder and VP of product development at FutureSmart, he explained that he innovated when emerging events introduced new and unexpected opportunities:

> *[A] young girl … was kidnapped … and was not returned alive … So we started the technology investigation into a personal protection device… Ultimately what happened is, everyone [in the personal electronics industry] slipped. Dramatically. That resulted in us kind of starting to shift and look towards the commercial market … we never wanted to go into the commercial market.*

While both Ralph and Glen developed innovations (new products, services, systems and processes) at FutureSmart, they gave different reasons for innovating. As I interviewed individuals from three high-technology organizations, numerous individuals across the organizations, many of whom were not assigned to roles related to

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[3]   In line with confidentiality agreements, all individual and organization names have been disguised.

innovating, mentioned developing innovations in line with requirements (like Ralph), while others spoke more about developing innovations in response to unfolding events or emerging opportunities (like Glen).

Turning to the literature for insight, I found that emerging research in the field of organizational change has found that individuals innovate (see especially Howard-Grenville, Golden-Biddle, Irwin & Mao, 2011) and describes that individuals participate in developing innovations (e.g. Bechky, 2003; Boxenbaum & Battilana, 2005; Reay et al., 2006). Recent research by Howard-Grenville and her colleagues (2011) suggests that it is individuals that innovate, even in the absence of instructions to innovate. However, existing studies leave unanswered the question: *Why do individuals engage in innovation?*

To explore this question, I take an inductive approach. In the remainder of this paper I explain this approach. First, I introduce the organizational change literature which inspired my research question, and from which I drew my research design. I also explain why I focus on individuals and their descriptions of the innovation process. Then I describe my data gathering and analytic methods, and how this led to my discovery that innovating individuals pursue different goals and are motivated to innovate in different ways. I explain how my results resonate with those in the regulatory focus literature, and compare the results of a regulatory focus survey that I administered to my interview participants with those of my qualitative analysis. Finally, I propose a theoretical model of why individuals engage in innovation; and I discuss the implications of this model for theory and practice.

Structures, Individuals and Innovation

In the management literature innovation is largely spoken about as an organizational activity (Benner & Tushman, 2002; Phelps, 2010). Technology patents and production data are often measured as proxies for innovation, produced by product development and R&D departments (Ethiraj & Levinthal, 2009; Geroski et al., 1997; Helfat & Peteraf, 2009; Phelps, 2010; Siggelkow & Levinthal, 2003; Sutcliffe et al., 2000; Tushman et al., 2010; Tushman & O'Reilly, 1996; Tushman & O'Reilly, 1999). We can

infer from these studies that individuals within these departments simply perform the tasks laid out for them as a result of their roles in the organization, and that the contributions of individuals to the innovation process and the outcomes of these processes are defined by the organizational roles in which these contributions take place. In other words, much existing research does not focus on individuals, but rather suggests that innovation happens as the result of organizational roles and structures that facilitate and prioritize innovation (Raisch et al., 2009), and where instructions and resources to innovate are given (Ethiraj & Levinthal, 2009; Geroski et al., 1997; Helfat & Peteraf, 2009; Siggelkow & Levinthal, 2003; Sutcliffe et al., 2000; Tushman et al., 2010; Tushman & O'Reilly, 1996).

There are, however, some scholars who have suggested that individuals are important to innovation (Hargadon & Bechky, 2006) and especially in the initial phase of innovation (Hargadon & Bechky, 2006; Kurtzberg & Amabile, 2001). Amabile and Khaire (2008) add that individuals innovate when called upon to do so, within structures (e.g. skunkworks, or collaborative work teams) set up for them to innovate, and when given financial reward, independence, and support in the event of failure.

Scholars in the organizational theory literature argue that individuals play even more important roles in innovating than previously suggested (Howard-Grenville et al., 2011). Howard-Grenville and her colleagues (2011) suggest that individuals do not always wait for instructions or structures before they innovate. They argue instead that individuals identify and create spaces to present new ideas and develop innovations even when they are not necessarily assigned innovation roles, are not given instructions to innovate, nor are they compensated for innovating (Howard-Grenville et al., 2011). However, if individuals identify and create spaces for new ideas without instructions or incentives to innovate (Howard-Grenville et al., 2011), this raises the question: *Why do individuals engage in innovation*?

Individuals in innovation

Grounding my question in the work on innovating individuals by Howard-Grenville and colleagues (2011), I turned to the organizational theory literature. An extensive body of research in this area focuses on the roles of individuals in the process of creating

innovations in the form of new processes, practices, products and systems. Many researchers in this field recognize that individuals play key roles in the process of innovation (see especially Bechky, 2003; Boxenbaum & Battilana, 2005; Howard-Grenville et al., 2011; Reay et al., 2006). Furthermore, their studies show that by paying attention to how individuals talk about innovating, it is possible to gain insight into the roles that individuals play in innovating. For example, in her study, Bechky (2003) analyzed conversations to explore how individuals developed new products and new product designs. Boxenbaum and Battilana (2005), Howard-Grenville and colleagues (2011) and Reay and colleagues (2006) analyzed interviews and conversations to understand how individuals introduced new processes and practices were adopted into the organization.

It is conceivable, therefore, that by looking at how individuals talk about innovating, I might begin to understand what individuals consider most important in their work. By understanding what individuals consider important I might, in turn, gain insight into why individuals engage in innovating. Therefore in order to explore why they engage in innovating, I decided to look at how individuals talk about innovating. In the next section I describe how I did this.

Research Approach

Research setting and design

To explore why individuals engage in innovating by looking at how they talk about the process, I interviewed individuals in three high-technology organizations in the Pacific North-West of North America. I used a theoretical sample (Dougherty & Hardy 1996; Eisenhardt, 1989; Hargadon & Bechky, 2006) made up of FutureSmart, ParadigmShift and GreatInsight (see **Appendix A**) because the organizations had been publicly recognized for being innovative. As a result, I was fairly confident that this sample contained individuals who would be able to talk to me about the processes of innovating in which they had participated.

Data collection

I initially interviewed the founders and key senior managers in each organization. After this, I used a snowball sampling technique to identify additional study participants. I did this by asking participants to recommend me to other individuals in the organization who were involved in innovating. I informed all interview participants that I was studying individuals' roles in the innovation process in high-technology firms. I then asked participants to talk to me about their involvement in innovating in their organization. My interest was in individuals' descriptions, rather than the 'facts' relating to what individuals had done or produced.

My final sample contained a total of 32 participants across all levels, from employee to chief executive officer, in each organization. Participant interviews lasted between 1 and 2.5 hours each, giving a total of over 36 hours of interview data that I collected over a period of six months. This amounted to 584 double-spaced transcribed pages.

Data analysis

The exploratory nature of my research question led me to enter the analytic process with no *a priori* theoretical perspective or model about why individuals engaged in innovation. The only upfront decisions I made were to analyze individuals' discussions about innovating, to follow an inductive process of analyzing data, looking for patterns, and only seeking to understand how my findings related to existing theory once clear patterns emerged.

I also enlisted the help of a research assistant to help me code the data. I decided that a second coder would help reduce interpretation bias by reconciling potentially different perspectives of the individuals' descriptions of innovating (Barley, 1996) and so improve the reliability of my analysis. We began with an in-depth analysis of my interview data using a grounded approach (Glaser & Strauss, 1967). We followed a rigorous process: going through individuals' description, line-by-line; constantly comparing the descriptions within a single transcript and then across transcripts; identifying and assigning codes to these descriptions; writing memos about what we were seeing; and building definitions for the codes we created for individuals'

descriptions about innovating (Miles & Huberman, 1984). Both coders individually analyzed each transcript. Then we would meet to discuss and compare our codes, negotiate and agree upon codes and definitions, and then recode each transcript (Barley, 1996). We spent more than 100 hours analyzing transcripts individually, and more than 70 hours in joint coding and recoding (Barley, 1996).

Following this process, we coded 1376 quotations as relating to innovating and assigned 20 codes to these quotations. As the research assistant and I created memos and definitions for each code (see **Table 10**), we identified that the codes we had created indicated what individuals valued. For example, descriptions indicated that some individuals valued 'process continuity and consistency', 'enhancing existing processes', 'known, given processes' or 'conforming to defined processes to prevent failures'. I grouped related codes into seven categories (Glaser & Strauss, 1967), and found that my resulting categories reflected the drivers of individuals' behaviour, and defined the categories in terms of the drivers of behaviour reflected in each category (see **Table 11**). For example, I found that the group containing the four codes mentioned previously, each indicating values related to 'correctness' and 'process', suggested that individuals were driven to adopt "correct processes".

To gain insight into the codes and categories I had identified I turned to the literature. Research by Theresa Amabile and several co-authors (Amabile, 1993, 1997; Amabile, Hill, Hennessey, & Tighe, 1994; Amabile & Khaire, 2008) into the role of individuals in the initial stages of the innovation process (George, 2007) indicated that values and drivers were components of individuals' motivation to innovate. I reflected on the codes and categories we had identified in our analytic process, and determined that they did, indeed, relate to different aspects of individuals' motivation when it came to innovating.

Table 10. ***How Individuals Talk about Innovating - Codes, Code Definitions and Motivation Categories***

Code	Code Definition (rule for assigning code)	Motivation category
Process continuity and consistency	Says wants to maintain consistency/ status quo/ current path	Correct process
Enhancing existing processes	Says wants to enhance/ build on top/ improve (rather than replacing) existing processes	
Known, given processes	Says needs to adopt and implement given/ recognized/ 'right' processes	
Conforming to defined processes to prevent failure	Says wants to follow known processes because deviation is 'bad'/ unacceptable	
Absolute truth	Talks about wanting to do what is 'true' and 'real'	Truth
Doing what is known to be right	Describes being compelled to 'do the right thing'	
The right way of doing things	Talks about ensuring that things are done the 'right' way	
Knowing through sharing	Insists on sharing in order to acquire full knowledge	Certainty
Certainty in authority	Talks about wanting to do what has been authorized by the leaders because it is 'correct'	
Usefulness and purpose	Says wants to make and do things that are useful/ purposeful/ worthwhile	Purposeful opportunity
Pursuing opportunities that present themselves	Describes being energized about pursuing emerging opportunities	
Experimentation	Describes being motivated to discover new things through experimentation	Trial and error
Failure required for learning	Talks about welcoming failure because it enables learning	
Many "truths" / no single right answer	Describes being excited by exploring numerous possible alternatives	Uncertainty
Process evolves - path to solution is variable and dynamic	Describes being energized by dynamic situations that require changes to decisions and solutions	
Unknown outcomes	Talks about being motivated by opportunities to build yet-unknown solutions	
Learning by doing	Describes excitement about doing things and gaining knowledge in the process	Experience
Authority comes from experience	Says values the experience of those who've done things before and failed	
Visible change, not necessarily measurable	Describes wanting to produce visible, purposeful change; where change is not measured or quantified	
Personal limitations	Talks about being motivated by personal failure and the desire to do better next time	

Table 11.   Motivation Category Definitions

Code	Category	Category definition
Process continuity and consistency Enhancing existing processes Known, given processes Conforming to defined processes to prevent failure	Correct process	Relates to being motivated to adopt 'the correct process that is recognized, legitimate and that maintains the status quo
Absolute truth Doing what is known to be right The right way of doing things	Truth	Relates to wanting to do what is known to be 'true'
Knowing through sharing Certainty in authority	Certainty	Relates to wanting to know what is being done and by whom, and that it is authorized/ approved
Usefulness and purpose Pursuing opportunities that present themselves	Purposeful opportunity	Relates to seeking purpose in emerging opportunities
Experimentation Failure required for learning	Trial and error	Relates to valuing learning/ experience gained by trial and error
Many "truths" / no single right answer Process evolves - path to solution is variable and dynamic Unknown outcomes	Uncertainty	Relates to being motivated to explore many options, to navigate changes in the environment, and to see where they lead
Learning by doing Authority comes from experience Visible change, not necessarily measurable Personal limitations	Experience	Relates to being driven to gain and apply knowledge learned through experience and in the process of 'doing'

I then looked to see if there were identifiable differences between individuals with respect to the motivation categories they mentioned in their discussions. I listed the motivation categories identified for each individual, and compared the lists across individuals. I discovered that individuals fell into two groups with respect to the motivations they described in their interviews. Each group exhibited a unique combination of motivations categories, suggesting that the individuals in one group were motivated to innovate differently to individuals in the other group. I also found that individuals in each group considered and pursued different goals. As a result of being motivated to pursue different goals, I found that the individuals in the two groups approached innovating differently. Therefore, drawing again from Teresa Amabile's (1997) work, I interpreted the groups as having different 'innovation orientations'.

In searching for insight into my results, I also found that my groupings of individuals based on their motivations resonated strongly with concepts central to the regulatory focus literature. Therefore, in a second phase of analysis, I explored whether innovation orientations were related in any way to regulatory focus. I did this by administering three accepted, published regulatory survey instruments to my interview participants. While my findings suggested a relationship between innovation orientations and regulatory focus, they also revealed distinct differences between the two constructs. This insight enabled me to propose a theoretical model, with implications for theory and practice, of why individuals engage in innovation.

Results

In this study, I set out to explore why individuals engage in innovating. Through an inductive analysis of how 32 individuals from three high-technology organizations talked about innovating, I found that the individuals in my sample fell into two groups that valued and were driven by different things, and were thus motivated in different ways (Amabile, 1993, 1997; Amabile et al., 1994; Amabile & Khaire, 2008). Furthermore, I found that these individuals considered and pursued different goals, which led to them to approach innovating in different ways. Below I explain these findings in more detail.

What individuals say indicates what motivates them to innovate

Focusing first on how individuals talked about innovating, my research assistant and I identified 20 codes, which we then grouped into seven categories (refer to **Tables 10 and 11, above**). I interpreted these codes and categories as relating to individuals' motivations for innovating.

Motivated to adopt 'the correct process'

The first category of motivations that we found related to adopting 'the correct process.' This category was a consolidation of codes about being motivated by: ensuring process continuity and consistency; enhancing existing processes; adopting known, given processes; and preventing failure by conforming to defined processes.

Process continuity and consistency. Many individuals mentioned that they felt compelled to maintain the consistency of the organization's current processes, specifically using words and language relating to maintaining the status quo, keeping things the same, and continuing along the current path. Chris, a software development team leader at FutureSmart said, "[Y]ou know there is stuff you shouldn't touch." Similarly Sam, the senior development manager at FutureSmart, explained that he believed it was necessary to do things "without having to make drastic change." Ian, another software development team leader at FutureSmart, stressed how any new development that he engaged in had to "fit our current model." Nate, the president of GreatInsight, added that he believed it was important to "maintain [GreatInsight's] competitive position."

Enhancing existing processes. Numerous individuals spoke of a desire to enhance existing organizational processes, specifically using words and language around building on top of, and enhancing and improving (rather than replacing), existing processes. In Chris's interview, he explained that he believed "[FutureSmart] could do better with the same resources." Dale, the project management leader at GreatInsight, explained that when innovating he was driven to "remove the wasteful steps, remove the inefficiencies. Making things leaner and lighter for our next stage."

Process is given, known. Several individuals indicated that it was very important to them to adopt and implement given and known processes, describing these processes as 'right' and describing the organization's adoption of such practices as necessary. For example, when Chris said, "If I see him make some mistakes … I'll try to correct them and tell him 'Why don't you give this a try rather than this, because this is the more formal way of doing things'", he explained that "the more formal way of doing things" was right (not doing things in the formal way was a "mistake" which needed to be "corrected"). Harry also explained that he assigned high value to external, widely adopted processes when he explained:

> *[A] true, structured process … will allow us to fulfill orders in a relatively painless manner, accurately, and without requiring a high degree of human intelligence … [like] a real gigantic SAP style manufacturing management processor.*

Defined processes prevent failure. Numerous individuals explained being motivated to follow known processes because they considered deviation a failure. For example, Chris described "[t]rying to push the company to change their process from something that was very *ad hoc* to something that's more well adopted in the agile community", suggesting that "*ad hoc*" processes that were not widely adopted were unfavourable. Harry, the operations director at FutureSmart, similarly indicated being driven to adopt 'correct' processes: "It's gone from kind of *ad hoc* meetings … to a much more structured weekly meetings structure, monthly reporting structure, and review structure." Although Harry did not reference a given or known process, the implication was that 'weekly meetings' and a 'monthly reporting structure' were 'correct,' while an "*ad hoc*" process was unacceptable.

Motivated by 'truth'

The second category of individuals' motivations related to pursuing a single 'truth.' This category was formed by grouping together codes relating to motivations to pursue: an absolute truth; doing what is known to be right; and the right way of doing things.

Absolute truth. Several individuals indicated a belief in a single 'truth' which applied to their organization and their work, using words and language like 'true' (as mentioned by Harry above), and 'real'. For example, Rick, a senior leader at GreatInsight, stated that he was "really trying to get [the executive] to confront reality." From this, I inferred that Rick believed that a singular reality existed. We distinguished codes relating to being driven by an absolute 'truth' from those relating to known and widely-adopted process or practices. Thus, language indicating an epistemological view that there is 'truth' that is absolute (as opposed to being relative, or socially constructed) we coded as 'absolute truth'; while widely adopted processes or 'best practice' that individuals described as appropriate under a given set of conditions we coded as 'process is given, known'.

Doing what is right. Many individuals described being compelled to 'do the right thing.' For example, Rick explained that the new consulting service he was implementing would "demonstrate … the right thing". Harry also indicated being driven by what was

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right, when he explained the objective of the improved monitoring processes that he introduced: "Are they actually doing the right thing?"

The right way of doing things. Several individuals indicated that they believed the 'right' things would be done if they were just done in the 'right' way. For example, Sam explained: "[T]hese are the tasks … we should be doing for this particular release. This is the order … for all those tasks. " In this statement, Sam explained that he was driven to execute a prescribed series of steps because it would result in the 'right' outcome. Chris similarly described being driven to doing things in the right way:

> *[In order to implement an agile process] I came with a list of process changes that I wanted to see implemented … and plastered them on my wall and said, 'From here to here, here's what I want to see.*

Motivated by certainty

The next category of individuals' motivations related to individuals' desire for certainty, which they described in terms of knowing what needed to be done, that it would be done correctly, and that it would have expected results. This category was the consolidation of codes relating to being motivated by: knowing through sharing; and certainty in authority.

Knowing through sharing. Many individuals mentioned that having full knowledge was of great importance to them, and mentioned being driven to engage in sharing to acquire others' knowledge. Harry, for example, implied that he assigned great value to information sharing when he said, "[I]nformation is getting communicated completely and in a timely manner." Rick and Ian also provided strong descriptions of being motivated by certainty. Rick explained that he had designed his new division with a focus on being,

> *[A] world class collaborative information environment … we're going to get everyone to role play the different roles within a business … it would give everybody a better perspective of what others are doing ... Then we share that between us.*

Similarly, Ian explained that *not* knowing which product he or his team would be working on day-to-day "is a burden on the overall culture."

Certainty in authority. A number of individuals indicated that they valued highly the certainty provided by authority. When Sam stated that "[the team leads] can go grab the tasks based on [the development manager's] order", he implied being motivated by the certainty of what team leaders did every day (going and grabbing "the task" suggested that these were regular and expected activities) because these were the 'correct' activities as defined and authorized by the senior manager.

Motivated by purposeful opportunity

This category is the first of four that provide contrasting motivations to those listed previously. I labeled this category 'purposeful opportunity' because it grouped codes relating to purpose and pursuing emerging purposeful opportunities.

Purpose. In contrast to descriptions about valuing continuity, we found that a number of individuals were motivated by utility and purpose. For example, Nathan, a software engineer at ParadigmShift, indicated his motivation to create a useful tool when he said: "I reconfigured it so it is very easy to get the useful data out of it for controls." In this description, he indicated that it was the purposefulness of the change that he considered worthwhile. Nell, the customer relationship manager at FutureSmart, displayed similar motivation – related to building something useful – when she stated: "I figured it was easier to have this system [which I put] in place, rather than emailing back and forth."

Purposeful opportunities that present themselves. In contrast to descriptions about being motivated to adopt known, given, and 'right' processes, we found that numerous individuals indicated that they were motivated to pursue emerging opportunities to create purposeful solutions. For example, Rowena, a senior leader at GreatInsight, said,

> Canada is suddenly in the middle of a once in a generation-type of procurement cycle ... Canada requires that [it's suppliers] have to place $1 billion of work within Canada ... Here we are, a Canadian company, and we can leverage this.

From her description we inferred that Rowena valued the emergence of new opportunities, and was driven to find new and useful ways of approaching these opportunities.

Motivated to learn through trial and error

This category of motivations was related to learning through trial and error. This category was formed by grouping different codes associated with learning through trial and error; i.e. experimentation, and the importance of failure for learning.

Experimentation. Gerry, a hardware developer at ParadigmShift, illustrated that he was motivated to discover new things through experimentation:

> *I wanted to try it, like, what could happen? Like, can we run it to high, the higher [setting], and then why not? We just decided to try it … I turned up the [setting], just to play around. Then we made a discovery … That was one incident where we just played around and we learned something new … It's always just playing around and then you notice something new.*

Hayden, an engineering technologist at ParadigmShift, also indicated that experimentation provided a way to learn: "We spent a lot of time, a lot of trial and error, to try and figure out how to make good [sealing mechanisms]."

Failure required for learning. Although some individuals had been motivated by the need to prevent failure, other individuals described being undeterred by failure because they were motivated to learn. For example, Wayne, a founder of ParadigmShift, described valuing highly and being motivated by the learning that came from failure:

> *And we needed that learning. We need to become experts in designing and building these things. And we needed to fail. If we didn't, and somebody has taught us how to do it, we wouldn't have that trail behind us.*

Valuing failure as an opportunity to learn was also demonstrated by Nigel, who said: "[W]e had our bumps in terms of quality and things like that …we were learning."

Motivated by uncertainty

In contrast to the category that grouped codes relating to seeking certainty and pursuing known outcomes, this category indicated that individuals were motivated by uncertainty; revealed in their descriptions of many options, fast changes in the environment, and no clearly defined outcomes. This category was formed by grouping the codes: many possibilities/ no single right answer; process evolves/ path is variable and dynamic; and unknown outcomes.

Many possibilities/ no single right answer. In contrast to descriptions suggesting that individuals were motivated by a single 'truth,' other individuals indicated that they found the idea of numerous possible alternatives motivating. In particular, Wayne demonstrated that he was energized by the idea of there being numerous possibilities for solving any problem, and by taking on problems that had no clear 'best' or 'right' solution when he said: "[W]e got everybody in a room and tried to figure out how we would build the [device]." Hayden, with respect to Wayne's approach to problems revealed that he, too, valued considering a variety of options in pursuit of a solution, when he added: "[S]ome of his ideas don't always work out but together we're able to hammer something out that works in the end."

Process evolves/ path is variable and dynamic. In contrast to the individuals' descriptions of being motivated by doing things the right way, others described being driven by evolving, dynamic, uncertain events. For example, Rowena's description suggested that she was energized by the dynamic nature of the opportunity she was pursuing:

> *We have the conceptual vision ... We know, our team collectively, what we want to do ... And we know we've got … constraints. That's a given. There are things ... we know we don't know ... Then there are things we don't know we don't know ... Stuff is going to come up.*

She seemed to value the ability to adjust the innovating process as new events and information arose. Similarly, Owen, a co-founder of FutureSmart, indicated being motivated to innovate as a result of changes in the environment:

If that structure isn't valued in the market, I don't care that we've 'wasted' five, seven, eight years and millions of dollars into that platform. If that platform isn't being valued by the market, it has to move on.

Nathan also indicated being driven to innovate as a result of emerging ideas when he said: "[W]e didn't plan for a … sensor on one of the [components]. Later on … we figured that would be very useful and we added one in."

Unknown outcomes. In contrast to individuals' descriptions of placing high value on certainty, other individuals mentioned being driven by the lack of certainty in unknown outcomes. For example, Rowena again appeared motivated and energized by the open-ended nature of the opportunity for which she was developing a new service, when she said,

No idea if [the opportunity for which the consulting division is being created is] going to be deployed ... We don't know. We just do not know if it will exist.

We inferred from Rowena's description that she valued ambiguity. We saw the same motivation in Glen's and Owen's descriptions: "That's the exciting thing. We don't even know yet where we're going to go with this service." (Owen); and "[T]he one thing that we knew was that we didn't know what was going to happen." (Glen).

Driven by experience

This category of motivations was related to being driven to gain and apply knowledge learned through experience and gained in the 'process of doing'. In their interviews, individuals indicated being driven by experience when they described: gaining and applying experience; learning by doing; authority comes from experience; visible change; and acknowledging limitations.

Learning by doing. A number of individuals indicated that they were motivated by gaining knowledge through experience. Rowena, for example, stated: 'I don't think we're going to learn that until we start actually contracting." Wayne also described being motivated to engage in innovating in order to learn: "[W]e needed to go through this process to understand … nobody ever thought or was concerned with [this possibility] until we had this problem."

Authority comes from experience. In contrast to the importance some individuals placed on organizational hierarchy, others assigned value to those with the experience that came from learning and failing. For example, Isaac, ParadigmShift's co-founder, explained that he valued and was motivated by the authority that came from extensive experience with solving problems in a given field:

> *Wayne has the most experience with this type of … design … A lot of the issues and considerations and decisions that are involved … he's already been exposed to … most of the framework and decision points, around what to do and when, were essentially out of his brain.*

Visible changes, not necessarily measurable. While some individuals described being driven by being able to measure and prove the impact of change, we found that others were driven, instead, to bring about visible, purposeful change, despite an absence of metrics or defined indicators of success or failure. For example, Isaac indicated that he assigned importance to the ability of his new process to produce a useful product, despite the fact that the product could not be judged against any measurable or quantifiable criteria: "Eventually someone fabricated a [device] that was quite similar to the tradeshow item. That was a good place to be." Similarly Gerry added, with respect to the same process: "[I]t wasn't perfect but it was successful to that degree … [the materials we pressed together with heat] combined."

Personal limitations. Several individuals described being motivated by the personal failures that resulted from their experiential learning and experimentation. For example, Wayne described being motivated by the failures he experienced when developing ParadigmShift's new device: "[A]fter seeing the result … I should have been able to figure out the fix ... so I was kicking myself. Then I got it working and working well." Similarly, Hayden stated: "Now that it's built and done, I wish I could change a few things … This is the first time I've ever built one. The next one will be better, I promise. "

Two types of individuals

During the coding and categorization process, I observed that each individual mentioned multiple motivations for innovating. As a result, I noted the motivation codes and categories for each individual and then compared the combinations of categories

across individuals. I discovered that the individuals in my sample fell into two groups with respect to the motivations they mentioned in their descriptions of innovating (see **Tables 12 & 13**).

The first group of individuals was motivated by correct process, truth, and certainty, which I interpreted as normative motivations (Anderson & Moore, 1957). Individuals in this group were motivated by doing the right thing in the 'right' way so that their efforts could be evaluated as 'right' and good, and by conforming to ideal standards. The second group of individuals was motivated by purposeful opportunity, trial and error, uncertainty, and experience, which I interpreted as descriptive motivations (Anderson & Moore, 1957). In other words, individuals in this group were motivated to consider multiple options and possibilities when innovating, without ascribing any particular option more value than others, and determining which options worked by eliminating those that failed.

Table 12.   Motivations of Individuals with a Should-Be Innovation Orientation

Language	Motivation	
	Code	**Category**
"Things we can do without having to make drastic change" (Sam) "will that fit our current architecture" (Ian) "this is not how our system is going to be because this is not the way to do the system." (Victor)	Process continuity and consistency	Correct process
"We could do better with the same resources" (Chris) "now it's going to be a lot more formal." (Sam) "much more organized and much more committed" (Nate) "removing the wasteful steps, removing the inefficiencies. Making things leaner and lighter for our next stage" (Harry)	Enhancing existing processes	
"If I see him make some mistakes … I'll try to correct them and tell him 'why don't you give this a try rather than this, because this is the more formal way of doing things'" (Chris) "ensuring that processes and controls … are adhered to" (Harry) "If you look at our forecast for next year … it's 10% of where it needs to be ... A normal business … would not be sitting with just 10% of it's opportunities identified for next year" (Rick)	Known, given processes	
"[I'm] just making sure we're following a process" (Sam) "Trying to push the company to change their process from something that was very ad hoc to something that's more well adopted in the [software] community" (Chris) "It's gone from kind of ad-hoc meetings and shouting questions across the office, because we all sit in one room, to a much more structured weekly meetings structure, monthly reporting structure, and review structure" (Harry)	Conforming to defined processes to prevent failure	

Language	Motivation	
	Code	Category
"everyone has a common view" (Chris) "I'm really trying to get them to confront reality" (Rick) "It's not based upon just an opinion - it's based upon the fact" (Rick)	Absolute truth	Truth
"If other people are doing it, then it makes sense to go ahead and do it too" (Sam) "demonstrate … the right thing" (Rick) "it is not the ideal way" (Ian)	Doing what is known to be right	
"these are the tasks … we should be doing for this particular release. This the order I have for all those tasks" (Sam) "I came with a list of process changes that I wanted to see implemented and ranked them and plastered them on my wall and said 'from here to here, here's what I want to see.'" (Chris)	The right way of doing things	
"knowledge will be shared" (Sam) "I learn from you, you learn from me" (Ian) "information is getting communicated completely and in a timely manner" (Harry) "[not knowing] is a burden on the overall culture" (Ian)	Knowing through sharing	Certainty
"they can go grab the tasks based on [the development manager's] order" (Sam) "I'm still the leader … more from a top-down approach, where I dictate what will be done" (Ian) "as long as I can persuade Sam to initiate change … the executives [will] openly listen" (Chris)	Certainty in authority	

Table 13.   Motivations of Individuals with a Could-Be Innovation Orientation

Language	Motivation	
	Code	Category
"it was easier to have this system in place, rather than emailing back and forth" (Nell) "I reconfigured it so it is very easy to get the useful data out of it for controls." (Nathan) "I took this design document and converted it to something useful for [our] purposes" (Evan)	Usefulness and purpose	Purposeful opportunity
"Canada is suddenly in the middle of a once in a generation-type of procurement cycle ... Canada requires that [it's suppliers] place [a sum equal to the contract] of work within Canada" ... Here we are, a Canadian company … we can leverage this" (Rowena) "here's our window" (Owen)	Pursuing opportunities that present themselves	

Language	Motivation	
	Code	Category
"I wanted to try it, like "what could happen? Like, can we run it to high, the higher [setting], and then why not?" We just decided to try it." (Gerry) "We spent a lot of time, a lot of trial and error, to try and figure out how to make good [components]" (Hayden)	Experimentation	Trial and error
"I guess at the time we didn't know, of course, why it didn't work. But now we learned a whole bunch of things … And we learned that the hard way after two months of trying to get something to work." (Gerry) "we had our bumps in terms of quality and things like that …we were learning" (Nigel) "And we needed that learning. We need to become experts in designing and building these things. And we needed to fail. If we didn't, and somebody has taught us how to do it, we wouldn't have that trail behind us" (Wayne)	Failure required for learning	
"some of his ideas don't always work out but together we're able to hammer something out that works in the end" (Hayden) "I try to be flexible and try different ways, knowing that there are different ways. There's not only one way to tackle a problem." (Evan) "how do we scale this thing up? So working through all the different ideas, different technology options" (Wayne)	Many "truths" / no single right answer	Uncertainty
"We have the conceptual vision ... And we know we've got … constraints … There are things ... we know we don't know ... Then there are things we don't know we don't know ... Stuff is going to come up." (Rowena) "We kept trying to work with the existing design that we had come up with, and then eventually decided it was time to throw it away and redesign" (Wayne) "we didn't plan for a … sensor ... Later on … we figured that would be very useful and we added one in" (Nathan) "I'm guided by the problems that I'm finding down the road" (Evan)	Process evolves - path to solution is variable and dynamic	
"No idea if they're going to be deployed ... We don't know. We just do not know if it will exist" (Rowena) "That's the exciting thing. We don't even know yet where we're going to go with this service." (Owen) "the one thing that we knew was that we didn't know what was going to happen" (Glen)	Unknown outcomes	

Language	Motivation	
	Code	Category
"I don't think we're going to learn that until we start actually contracting" (Rowena) "we needed to go through this process to understand … nobody ever thought or was concerned with [this possibility] until we had this problem" (Wayne) "this is just a learning process for me; a day-to-day thing" (Nell)	Learning by doing	Experience
"Wayne says it's the trade-off that we have to make … and Wayne's my boss" (Gerry) "Wayne has the most experience with this type of … design … A lot of the issues and considerations and decisions that are involved … he's already been exposed to … most of the framework and decision points, around what to do and when, were essentially out of his brain." (Isaac) "There are a lot of things that I know we are not doing by the book, but I know the book. I know the corners that we are cutting, trying to cut the right ones." (Evan)	Authority comes from experience	
" Eventually someone fabricated a [device] that was quite similar to the tradeshow item. That was a good place to be " (Isaac) "it wasn't perfect but it was successful to that degree … they combined" (Gerry) "Since it was myself doing a lot of the work, I suggested a new solution, we adopted it and that's what we're using today ... It makes things faster." (Hayden)	Visible change, not necessarily measurable	
"after seeing the result … I should have been able to figure out the fix ... so I was kicking myself. Then that got it working and working well" (Wayne) "Now that it's built and done, I wish I could change a few things … This is the first time I've ever built one. The next one will be better, I promise " (Hayden)	Personal limitations	

Individuals are motivated to pursue different goals

During the coding process, my research assistant and I also found and coded individuals' descriptions of the goals they pursued as they engaged in innovating. I observed that the goals that individuals pursued and individuals' motivations for innovating were related (see **Table 14**).

Table 14. ***The Relationship between Individuals' Innovation Orientations, and the Goals they Consider and Pursue***

	Should-Be Innovation Orientation			*Could-Be* Innovation Orientation	
GOAL	**Code**	**Illustrative quote**	**GOAL**	**Code**	**Illustrative quote**
Linear change	Fix failures and improve	"the sign of an intelligent organization is that if [a] problem happens again, we've put the infrastructure in place such that it wouldn't affect us." (Harry) "make change that's easy" (Sam) "that one of the components of the formal structure was to re-grow, get more science, into what the roles consisted of" (Dale)	Groundbreaking change	Create and build	"We're creating a [division], to help execute a business model that currently does not exist" (Rowena) "how the hell are you going to build it … But that led to this other idea ... We don't need to build the full thing" (Wayne) "I knew roughly what I wanted, so from there I devised a system" (Hayden)
	Measurable and provable change	"for every device they sell, they generate 10 support calls. This is the kind of thing we now can measure and act on, whereas in the past it was all just anecdotal rather than empirical" (Harry) "What we had at the end of that was a set of common standard processes, 75 of them, with a lot of associated templates and checklists, which really defined each of the process vectors for each of the roles participated in a software development team." (Dale) "ensure that our choice was the right choice" (Ian)			
	Continue along the known path	"Some people are hesitant with the change because they're afraid that it's going to be a big change. Of course, I don't think it is [going to be a big change]" (Sam) "You want to [do this]? I have this experience. I can tell you how to do it because I've done it before" (Rick) "Because you don't want something that is fairly new in the market and hasn't been proven" (Ian) "incremental gains over the course of time to get us to where we needed to be" (Harry)		Go beyond what already exists	"we know how things were done within the [existing] structure … and that wasn't what we wanted" (Rowena) "There are a lot of things that I know we are not doing by the book, but I know the book. I know the corners - I know the corners that we are cutting, trying to cut the right ones." (Evan) "we were … borrowing from an existing design … and making modifications to it to add additional compartments." (Isaac)

Pursue linear change

I found that individuals with normative motivations described pursuing goals related to fixing failures and improving; measuring and proving change; and continuing along the existing path.

Fix failures and improve. Many descriptions revealed that individuals were driven to fix failures and make improvements. Harry described a failure he had experienced:

> *I'd worked here for maybe 2 weeks when … my first real serious IT problem came up, we had no means to detect it. It was reported to us by a customer who was in the middle of presenting to a trade show. It was awful.*

He explained that this failure drove him to "[wrap] some process around this" because "the sign of an intelligent organization is that if [a] problem happens again, we've put the infrastructure in place such that it wouldn't affect us."

Dale indicated being motivated to making improvements when he explained that he revised the structure of the entire development organization to "get more science into what the roles consisted of."

Measuring and proving change. Several individuals indicated being driven to quantify and prove the impact and extent of change. For example, Harry described measuring and verifying change as worthwhile:

> *[F]or every device they sell, they generate 10 support calls. This is the kind of thing we now can measure and act on, whereas in the past it was all just anecdotal rather than empirical.*

Dale indicated being similarly motivated to measure and quantify change in order to demonstrate improvement over what existed previously:

> *What we had at the end of that was a set of common standard processes, 75 of them, with a lot of associated templates and checklists, which really defined each of the process vectors for each of the roles participated in a software development team.*

Changes continue along known path. Several individuals mentioned that they pursued changes along existing, known trajectories. Sam indicated that he focused on small and gradual changes when he explained:

> *Some people are hesitant with the change because they're afraid that it's going to be a big change. Of course, I don't think it is [going to be a big change].*

 Harry also described pursuing small, gradual changes: "… incremental gains over the course of time to get us to where we needed to be." When Rick said, "You want to [do this]? I have this experience. I can tell you how to do it because I've done it before", he demonstrated his pursuit of replicating what he had done before because it achieved measurable and guaranteed change.

Pursue groundbreaking change

I found that individuals with descriptive motivations described pursuing goals related to creating and building new products, practices, tools and systems; and going beyond what already existed.

Creating and building. Individuals in this group strove to create and build new solutions. In the examples provided above, Rowena demonstrated her focus on building something new. She repeated several times in her interview: "All along we've known we needed to do things differently." With respect to the new services division she was engaged in developing, Rowena explained that her goal in these terms: "We're creating a [division], to help execute a business model that currently does not exist."

Going beyond what already exists. Several individuals also described being driven to abandon what currently exists and develop brand new outcomes. Again, Rowena said of her new consulting division at GreatInsight: "[W]e know how things were done within the [existing] structure … and that wasn't what we wanted." Similarly, Wayne described seeking to go beyond what existed in the organization: "We kept trying to work with the existing design that we had come up with, and then eventually decided it was time to throw it away and redesign."

Individuals approach innovating differently

My analysis suggests a relationship between individuals' motivations, their innovation goals and their approach to innovating.

I found that individuals with normative motivations (Anderson & Moore, 1957) pursued linear change and approached innovating from the perspective of fixing and improving processes and systems, measuring and proving change, and continuing along the current path. Because individuals in this group repeatedly said that they 'should' or 'had to' approach innovating in a particular way, I referred to these individuals as having a *should-be* innovation orientation.

I found that individuals with descriptive motivations (Anderson & Moore, 1957) pursued groundbreaking change and approached innovating from the perspective of creating and building solutions, and going beyond what already existed. Because individuals in this group repeatedly described the many paths they could take and alternative methods they could try when innovating, I referred to these individuals as having a *could-be* innovation orientation.

Return to the Literature:
Innovation Orientation and Regulatory Focus

In keeping with the grounded process, I returned to the literature (Glaser & Strauss, 1967) to gain insight into the two innovation orientations that I had found in my analysis of how individuals talked about innovating. My descriptions of individuals as having either normative or descriptive motivations and an associated *should-be* or *could-be* innovation orientation seemed closely aligned to classifications of individuals in the regulatory focus literature. Specifically, individuals with a *should-be* innovation orientation from my study sounded very similar to prevention-focused individuals in the regulatory focus literature (Higgins, 1997). Similarly, individuals with a *could-be* innovation orientation from my study seemed to bear a striking resemblance to promotion-focused individuals from the regulatory focus literature (Higgins, 1997).

Prevention and promotion focus: Two ways of moving towards goals

Regulatory focus theory looks at how humans are motivated to approach and move towards desired outcomes (Wallace, Johnson, & Frazier, 2009; Higgins, 1997; Forster et al., 2003; Kröper et al., 2011). The theory argues that, when humans pursue goals, they make decisions about how to use information to help them achieve their objectives. The decision processes that guide individuals towards or away from outcomes are known as individuals' motivation systems (Carver & Scheier, 1981; Kanfer & Heggestad, 1997). Regulatory focus, then, "refers to cognitive processes that guide the selection of behaviors towards desired outcomes and away from undesired outcomes" (Wallace et al, 2009: 806).

Higgins and colleagues (1994) proposed that there are two distinct forms of regulatory focus that motivate how individuals approach goals. When individuals have a *prevention focus*, they use processes that avoid behaviors that do not align with a goal and that prevent the individual from achieving a desired outcome (Wallace et al., 2009). Individuals with a prevention focus are said to pursue an 'ought self' (Higgins, 1997: 516) which represents the individuals' obligations, duties and responsibilities (Higgins, 1997; Kroper et al., 2011). On the other hand, when individuals have a *promotion focus*, they use processes that align behaviour to a goal by focusing on attaining a positive outcome (Wallace et al., 2009). Individuals with a promotion focus are said to pursue an 'ideal self' (Higgins, 1997: 516), which represents the individuals' wishes, hopes and aspirations (Kroper et al., 2011). Therefore, although "both promotion and prevention involve motivation to approach or attain a task goal, they differ in their orientations towards how to successfully attain the goal" (Higgins, Friedman, Harlow, Idson, Ayduk, & Taylor, 2001: 21).

In my qualitative analysis I found that individuals with a *should-be* innovation orientation sought also to prevent failures and fulfill obligations. I also found that individuals with a *could-be* innovation orientation also sought to meet aspirational goals. This prompted me to explore whether the results of my analysis mirrored, extended or diverged from existing regulatory focus research.

Seeking a relationship between innovation orientation and regulatory focus

Therefore, in order to explore the relationship between innovation orientation and regulatory focus, I administered a 40-item regulatory focus survey to my interview participants. My objective was to assess and compare the same individuals' regulatory focus results against my qualitative results to establish whether they were related.

I invited all 32 of my original study participants to complete an online regulatory focus survey. The online survey instrument was a combination of three cited regulatory focus survey instruments developed by Higgins and colleagues (2001; 127 citations on Web of Science); Lockwood, Jordan and Kunda (2002; 118 citations on Web of Science); and Wallace and colleagues (2009; 1 citation on Web of Science). The combined survey instrument contained 40 items in total (see **Appendix B**).

Following the protocol laid out in the regulatory focus literature, I sought patterns in individuals' responses to the survey items (Higgins et al., 2001; Lockwood et al., 2002; Wallace et al., 2009). Because I wanted to determine whether individuals could be placed into two groups, I conducted a cluster analysis on individuals' survey responses. Finally, I compared the cluster solutions to the results from my qualitative study using a binomial hypothesis test to assess whether the relationship between regulatory focus and individuals' innovation orientations could be said to be non-random (H_A).

Survey results

Thirty participants completed the survey, giving a response rate of 94%. I scored item responses for each instrument as directed by the literature; assigning positive signs to responses to promotion-focused items (i.e. these item scores were added), and negative signs to prevention-focused responses (these item scores were subtracted).

Table 15 shows the correlations between the results for the different survey instruments. I found that instruments 1 and 2 were significantly correlated. This is supported in the literature, since Lockwood and colleagues (2002) find the responses to their survey instrument to align closely to those of Higgins and colleagues' (2001). The responses to survey instrument 3 were not significantly correlated with those of

instruments 1 or 2. This might suggest that instrument 3 (developed by Wallace et al., 2009) was designed to measure work-related aspects of regulatory focus not specifically measured by the other two instruments.

Table 15.   Correlation Table for Results of Survey Instruments

	Instrument 1	Instrument 2	Instrument 3
n=30			
Instrument 1	1		
Instrument 2	.548**	1	
Instrument 3	0.329	0.291	1
** Correlation is significant at the 0.01 level (2-tailed)			

I then entered the 40 scored item responses to the three survey instruments for each of the 30 respondents into a cluster analysis using a k-means clustering technique and selecting a two-cluster solution (SPSS, 2000). As mentioned previously, the aim of the cluster analysis was to determine if I could identify two groups of individuals based on how they responded to the items in the survey (cf. Higgins et al., 2001; Lockwood et al., 2002; Wallace et al., 2009) in order to compare the groups with the findings of my qualitative study. To determine how individuals clustered in terms of their responses to the items both within and across survey instruments, I ran cluster analyses on the responses to each instrument, as well as on each combination of instruments. The results of the cluster analysis for each instrument and combination of instruments are presented in **Table 16**.

To determine if there was a non-random relationship between the innovation orientations that I found in my qualitative analysis and regulatory focus, I compared the cluster solutions to the results of my qualitative study using a binomial hypothesis test. I found that the relationship between innovation orientations and regulatory focus was significant for the cluster solutions for instruments 1 and 2 separately; for 1 and 2 combined, and for 1 and 3 combined. These results suggested that the innovation orientations from my qualitative study were related to regulatory focus as measured by instrument 1, but this relationship is enhanced when regulatory focus is measured by instruments 1 and 2 together, or by instruments 1 and 3 together. In other words, after administering a 40-item regulatory focus survey to my sample of innovating individuals, I

found a significant, non-random relationship between individuals' innovation orientations and their regulatory focus.

Table 16.   K-Means Cluster Analysis and Binomial Hypothesis Test

Hypotheses:
H_0 = no/ spurious relationship between innovation orientation and RF
H_A = non-random relationship between innovation orientation and RF

Variable name	Description			
IO	Innovation orientation (1= *could-be*; 2= *should-be*)			
C_1	Cluster calculated using Instrument 1 responses			
C_{1+2}	Cluster calculated using combined Instruments 1+2 responses			
C_{1+3}	Cluster calculated using combined Instruments 1+3 responses			
RESPONDENT		IO	C_1	C_{1+2}	C_{1+3}
Sarah		2	2	2	2
Hayden		1	2	2	2
Tom		1	1	1	1
Ian		2	2	2	2
Gerry		1	2	2	2
Evan		1	2	2	2
Chris		2	2	2	2
Zack		2	2	2	2
Nigel		1	2	2	2
Nathan		1	1	1	1
Amy		1	1	1	1
Liam		1	1	1	1
Gill		1	1	1	1
Sam		2	2	2	2
Rick		2	1	1	1
Harry		2	2	2	2
Owen		1	2	1	2
Rowena		1	1	1	1
Nell		1	1	1	1
Ralph		2	2	2	2
Ivan		1	1	1	1
Hal		2	2	1	2
Noel		1	2	2	2
Wayne		1	1	1	1
Isaac		1	2	1	2
Ingrid		2	2	2	2
Dale		2	2	2	2
Glen		1	2	2	2
Nate		2	2	2	2
Ethan		2	2	2	2
Matches (M_i)		/30	20	22	21
$P(X \geq M_i)$			0.049**	0.000***	0.021**
n=30					
Shading indicates match					
Significance levels: *α=0.1 ; ** α=0.05; *** α=0.01					

Discussion

In this study I set out to explore why individuals engage in innovating. Like Ideo's Diego Rodriguez said of people and innovating: "People don't do what they do because someone told them to do it" (Amabile & Khaire, 2008: 102), I found that individuals did not simply innovate because of organizational instructions to innovate. To Amabile's (1997) suggestion that individuals innovate out of interest, curiosity, involvement, or a need for excitement or personal challenge, my study adds that individuals innovate as a result of identifying, attending to, and prioritizing different sets of goals and activities (see **Figure 3**).

Figure 3.   Theoretical Model of Why Individuals Engage in Innovating
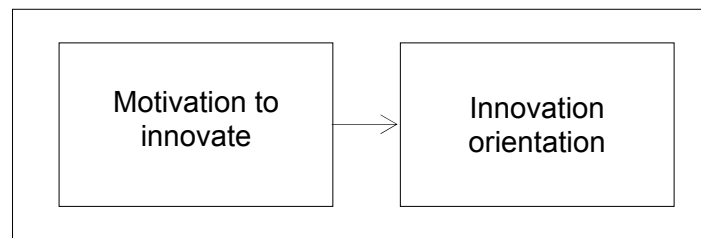
Based on my analysis, I propose that individuals with normative motivations (Anderson & Moore, 1957) pursue linear change goals and approach innovating with a *should-be* innovation orientation. Furthermore, individuals with descriptive motivations (Anderson & Moore, 1957) pursue groundbreaking change goals and approach innovating with a *could-be* innovation orientation.

The relationship between innovation orientations and regulatory focus

The motivations to innovate that I identified in my qualitative analysis seemed to resemble those described in regulatory focus literature. In addition, my survey results seemed to indicate a relationship between regulatory focus and innovation orientation. However, my findings diverged from this literature in terms of the goals that individuals pursue. Regulatory focus studies argue that individuals are motivated in different ways to approach goals (Higgins et al., 1994). The literature implies that individuals with different

regulatory foci might be given the <u>same</u> task, but will be motivated to approach these tasks with a prevention or promotion focus (Wallace et al., 2009: 806; Higgins, 1997; Forster et al., 2003; Kröper et al., 2011). In contrast to this literature, however, my analysis suggests that individuals fall into two groups, and that the each group actually calls to mind (i.e. perceives), considers (cf. May, 1979) and pursues <u>completely different sets of goals</u>. The group of individuals with normative goals approaches innovating and engages in tasks related to a *should-be* innovation orientation. The group of individuals with descriptive goals approaches innovating and engages in tasks related to a *could-be* innovation orientation. These goals and tasks are seemingly unrelated to financial incentives or perceived organizational support for new ideas (cf. Amabile & Khaire, 2008). Therefore, individuals innovate because they perceive, identify and are motivated to pursue goals related to their innovation orientations. Individuals' innovation orientations are in turn related to the tasks they perform in pursuit of these goals.

Identifying innovation orientations in practice

Although I propose that individuals' innovation orientations explain more about how individuals approach innovating than is explained by their regulatory focus, my quantitative study indicates that a regulatory focus survey offers a quick and useful way of identifying individuals' innovation orientations.

Leaders looking to determine where to place individuals in the organization such that they will be supported in the pursuit of their goals might consider administering a regulatory focus survey in order to get an idea of the individuals' innovation orientation. Managers should, however, take note that there is a 40% probability that individuals with a *could-be* innovation orientation appear to have a prevention focus (associated with a *should-be* innovation orientation) using a regulatory focus survey (refer to **Table 16**). I argue that this happens because individuals with different innovation orientations understand the same words differently (Barley et al., 1988; Bechky, 2003).

The idea that words have different interpretations for different people has its foundations in the study of pragmatics. Pragmatics is the field of linguistics that examines how individuals' assumptions about the world affect how they understand information (Barley et al., 1988; Brannen, 2004; Sperber & Wilson, 1986). Therefore, I

propose that *should-be* and *could-be* individuals understand the information presented in the survey questions quite differently and therefore might respond similarly to a question, even if it is aimed at revealing a regulatory focus other than their own.

For example, Question 2 from Instrument 1 (Lockwood et al., 2002) asks individuals to rate how true the following statement is on a scale of 1 (not at all true of me) to 9 (very true of me):

I am anxious that I will fall short of my responsibilities and obligations.

This question is asked as an indication of prevention focus, and therefore individuals with high prevention focus are expected to rate the question close to 9.

In my study of how individuals talked about innovating, however, individuals with both *should-be* and *could-be* innovation orientations said that they felt a great sense of responsibility. Individuals with a *should-be* innovation orientation saw their responsibilities as getting things 'right' and fixing failures. Individuals with a *could-be* innovation orientation discussed how they often took others along with them as they pursued opportunities with uncertain, unknown outcomes. I observed that *could-be* individuals felt great responsibility for the success and failures of those they took with them on their journeys into the unknown. Thus both types of individuals would rate this item close to 9 on the regulatory focus survey, causing confusion when it came to assessing the individual as having either a prevention or promotion focus.

Because the wording of regulatory focus surveys may incorrectly identify individuals with a *could-be* innovation orientation as having a *should-be* innovation orientation (by identifying them as having a prevention focus), I propose that managers supplement their survey results with short employee interviews. By paying attention to the motivations and goals that individuals describe when talking about innovating, I submit that leaders will be in a stronger position to identify individuals with a *could-be* innovation orientation, suitable for positions involving pursuing new opportunities and bringing about groundbreaking change.

Conclusion

The aim of this study was to seek an answer to the research question: 'Why do individuals engage in innovating?'. By paying attention to how individuals talked about innovating, I found two groups of individuals, each with a unique set of goals as well as motivations for and approaches to innovating. Individuals with normative motivations pursued linear goals, and approached innovating with a *should-be* innovation orientation. Individuals with descriptive motivations pursued groundbreaking goals and approached innovating with a *could-be* innovation orientation.

These two groups of individuals resembled the two types of individuals described in the regulatory focus literature. I found empirical support for my proposition that individuals could be grouped based on how they approached their goals. However, where regulatory focus studies suggest that different types of individuals pursue the same goals in different ways, I argue that individuals with a *should-be* innovation orientation are predisposed to perceiving, considering and pursuing a completely different set of goals to individuals with a *could-be* innovation orientation.

My study suggests that by using a quick regulatory focus survey, leaders can identify employees' innovation orientations. In this way, leaders can better place individuals in positions where organizational goals and expected tasks align with individuals' innovation orientations.

Chapter 4.

Dressing New Thoughts in Old Clothes:
Why and How Some Ideas are Shared and
Developed into Innovations

When the device that Wayne's[4] team at ParadigmShift, an environmental engineering start-up, was developing would not stop leaking, he had an idea that the problem was with the sealing mechanisms. He got his team together and shared his idea of a new mechanism to stop the leaking. Wayne and Isaac, the organization's leaders, visited industry tradeshows in the hope of gaining new insight into their problem, and they stumbled upon a mechanism that seemed to have all the characteristics Wayne was seeking.

Taking Wayne's idea and the trade-show prototype, Wayne's team brainstormed ways to build a customized mechanism for their device. ParadigmShift required a customized mechanism because its device was unique and had specific parameters, but also because the organization had neither the funds to buy externally produced customized mechanisms nor the ability to divulge the sensitive intellectual property needed to explain to an outside supplier what to manufacture and why. In coming up with their own low-cost, purpose-built new mechanism, no crazy idea from any members of the team was discouraged.

The team scoured the warehouse for materials and a way of binding them together with heat, like in the trade-show prototype. Nathan found a clothes iron, lying in

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[4]   In line with confidentiality agreements, all individual and organization names have been disguised.

a cupboard, and started ironing together different substances. Over the next 6 months, numerous substances with different characteristics were found and bound together by Nathan and Hayden – first by clothes iron, and then by a new T-shirt press the organization acquired for the job. Eventually, they perfected a design for a mechanism that did not leak, and patented the process for manufacturing perfect mechanisms.

Over the course of my study, I heard numerous stories like Wayne's; about how an individual's idea led to the eventual development of an innovation outcome in the form of a new organizational product and/or process. What struck me about these stories was how communication was central to each innovation outcome's development. Story after story involved individuals sharing their ideas before they were developed into innovation outcomes. Many other stories, however, involved ideas that were shared, but that fell on deaf ears or were dismissed, and so abandoned by their initiators. I wondered, then, why and how were some ideas more readily shared and developed into innovation outcomes than others?

Scores of studies tell us about the importance of communication between individuals (e.g. Brown & Eisenhardt, 1997), business units (e.g. Bechky, 2003; Nonaka, 1994) and organizations (e.g. Agarwal, Echambadi, Franco, & Sarkar, 2004), for innovation to occur. However, what I was not able to discover from this literature is why some ideas are more readily shared, while others are abandoned. Recent research by Hargadon and Bechky (2006) looks specifically at how innovations are developed by collectives. As these authors state, prior research about idea generation at the individual level seems to overlook the process of innovation engaged in by creative teams. These authors provide new insight into how groups come together to develop innovations through a process of collective thinking. However, despite their research, I still remained puzzled about what I had observed: the same collective would take some ideas and develop them into innovations, but not others.

Therefore, in this paper I seek to explore the question: *Why and how are some ideas more readily shared and developed into innovation outcomes than others?* I do this by analyzing the descriptions given by individuals from three innovative high-technology firms about ideas that they initiated and participated in developing into innovations.

In the remainder of the paper, I review the literature about the role and process of communicating ideas in the development of innovation outcomes. Then I discuss my inductive research process. I present the findings of my grounded analysis, and propose a theoretical model of why and how some ideas are more readily shared and developed into innovation outcomes than others. Finally, I discuss the implications of this model for theory and practice.

Knowledge, Understanding, Language and Innovation

Knowledge sharing and innovation

A fundamental notion in the organizational theory literature is that innovation occurs when individuals share knowledge across different domains (Carlile, 2004; Cohen & Levinthal, 1990; Daft & Weick, 1984; Leonard-Barton, 1995; Nelson & Winter, 2002; Nonaka, 1994; Weick & Quinn, 1999). In her study, Bechky (2003) explains how product designs are developed through a process of sharing knowledge of different aspects of a design between different divisions within an organization. She shows that as a result of sharing knowledge, the differences between people's understanding leads to changes in their underlying knowledge, resulting in innovations.

Carlile (2004) clarifies that in the event that sharing parties have "common knowledge" (p.566), or a common body of knowledge that allows for communication between actors, they simply *transfer* ideas. However, when their knowledge differs in some way, they can no longer rely on common knowledge, and need to *translate* concepts into commonly understood terms such that they resonate with the sharing parties (see also Bechky, 2003; Brannen, 2004; Dougherty, 1992). Translation is required when the knowledge being shared is "ambiguous" (Carlile, 2004: 558) or "equivocal" (Daft & Weick, 1984: 291). Translation involves assigning meaning to the knowledge being shared such that it may be understood within the organizational context. Generally, understanding is shared between different parties through the use of translators, boundary spanners, or knowledge brokers (Hargadon & Sutton, 1997; Star & Griesemer, 1984).

Translation is illustrated in Brannen's (2004) paper where she discusses the sharing of operating practices from the US Disney Company with Tokyo Disneyland. She describes how the Japanese organization was required to replicate Disney's gift store in the Japanese location. The Japanese souvenir store needed to be "an exact replica of the original Disneyland in Anaheim, California" (p.593). However, the concept of a store in the Japanese context was different to the idea of a store in the US. Thus, the concept was translated into the Japanese context as "a large shopping mall serving the gift-giving needs of the Japanese" (p.609). Another example of translation is given in Boxenbaum and Battilana's (2005) study in which one actor assigns a new concept, 'CSR', the same meaning as 'diversity management' which is already understood in her organizational context.

Sometimes, the knowledge being shared requires that parties revise their existing understanding of taken-for-granted technical and design concepts. When receiving parties are required or forced to revise their existing understandings, their knowledge is *transformed* (Carlile, 2004). In this transformation process, parties' practices are modified, or abandoned and replaced by new practices. This requires that one or more parties change what is done and how it is done – resulting, therefore, in product or process innovation. Transformation, thus, results in new product or process innovations. Bechky (2003) illustrates the transformation process when she describes how sharing knowledge between the engineers, assemblers and technicians in her study results in changes to the engineers' knowledge in the form of modified products and a revised product design process.

Language and pragmatics

Many of the above-mentioned studies propose that knowledge can be communicated and acquired through language (Bechky, 2003; Boxenbaum & Battilana, 2005; Brannen, 2004; Holtgraves & Kashima, 2008). Scholars argue that when knowledge is communicated from one group to another through language, "ideologies are transmitted, and practices, meanings, values and identities are taught and learnt" (Fairclough, 1995: 219).

The notion that groups employ different language and have different

understandings of concepts and words comes from pragmatics. Pragmatics argues that two speakers can employ the same word differently even if they both agree on the way the word is spelled and defined. Barley and colleagues (1988) explain: "In speech, connotative differences may occur because of differences in role, situation, or intonation" (p.28). For example, the word 'doctor' might be understood differently by a medical resident undergoing his sixth year of training, and the parent of an infant born with a heart defect who must undergo emergency heart surgery. These two different individuals are considered members of different groups (i.e. medical professionals and patients), who have knowledge particular to their group that reflects the experiences of members of their group. The language employed to articulate this knowledge, therefore, has different connotations for members of the different groups (Barley et al., 1988).

The medical professionals and patients, then, can be considered to be different communities that have particular knowledge and understandings that influence their way of talking (Barley et al., 1988; Bechky, 2003; Garfinkel, 1967; Goffman, 1893). As a result, they are referred to as 'speech communities'. "When people assume they are speaking with other members of their speech community, they also assume a common understanding that influences their ways of talking" (Bechky, 2003: 313).

The idea of speech communities extends to the workplace, in which individuals' membership in particular communities (as a result of common training or experience) influences what they learn and do at work (Bechky, 2003; Brown & Duguid, 1991; Lave & Wenger, 1990). There is a strong relationship, therefore, between communities of speech and "communities of practice" in which members share common understandings of, therefore ways of talking about, their world (Bechky, 2003).

However, scholars differ in their articulations of what makes or defines a speech community. Brown and Duguid (1991) suggest that a speech community is comprised of individuals who are members of the same organizational division and who perform the same tasks. Bechky (2003) agrees and describes members from three separate departments who participate in the product development process as having three different 'languages' as a result of doing different work. In addition, though, Bechky (2003) and Reay and colleagues (2006) propose that communities of practice form as a result of the formal education and training those individuals undergo.

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Zilber (2002) describes how individuals with different ideologies form distinct speech communities. She also suggests members who consider themselves part of an organization form one speech community, while those who do not consider themselves organizational members form another. Boxenbaum and Battilana (2005) and Brannen (2004), on the other hand, argue that speech communities also work at the national level, because individuals reference understandings that arise from their particular national contexts.

Innovation as language shared between speech communities

The identification of speech communities is important because, as discussed previously, organizational theory scholars are interested in what happens when two different speech communities interact (Boxenbaum & Battilana, 2005; Brannen, 2004; Carlile, 2004; Ford & Ford, 1995; Hardy, Lawrence & Grant, 2005). Because understandings differ depending on the community, the knowledge and language employed by one community may be unintelligible to another (Garfinkel, 1967). Therefore, scholars study the changes that result when different speech communities try to communicate. By focusing on how individuals talk about innovating, scholars show that communication from one group to another results in the development of new meanings, perspectives, rules, and operating procedures within the receiving group (Bechky, 2003; Giddens, 1984; Rorty, 2006; Gergen; 1999).

In this study I adopt the methods used by these organizational theory scholars, and focus on the language used by individuals when they talk about sharing ideas and developing innovations to explore why and how some ideas are more readily shared and developed into innovation outcomes than others.

Research Approach

Research setting and design

I chose to seek answers to my research question by looking at the language that individuals in three North American high-tech ventures from the Pacific North-West of North America used to talk about sharing ideas and developing innovations. I selected

this theoretical sample of organizations (Dougherty & Hardy 1996, Eisenhardt 1989; Hargadon & Bechky, 2006) because the organizations all had public reputations for being innovative, and had each received awards for their innovations (see **Appendix A** for a description of the organizations). As a result, I was confident that I would be able to find individuals in these organizations that could talk to me about their roles in sharing ideas and developing innovations (Glaser & Strauss, 1967).

Data collection

I gathered language data through semi-structured interviews in which I asked individuals to tell me about the ideas they had shared and helped develop into innovation outcomes in their organizations. In each organization, I first interviewed the founders and key senior managers. I then followed a snowball sampling method, which involved asking participants to recommend additional participants who had been involved in innovating. At the beginning of each interview I informed participants that I was studying the process of innovation in high technology firms. I then asked participants to talk about the ideas that they had shared with others and helped develop into organizational innovations.

My final interview sample contained a total of 32 participants across different levels from each organization. Over a 6-month period I conducted more than 36 hours of interviews (interviews with participants lasted between 1 and 2.5 hours each). The interviews were transcribed, amounting to 584 double-spaced pages of text.

Case development and analytic process

From my interview data I identified 22 cases of ideas that had been initiated, shared with at least one other individual, and developed into new organizational products and/ or processes (i.e. what I define as 'innovation outcomes'). I constructed each case by collating accounts of the development of an idea from multiple sources. Each account reflected the individual's particular perspective on the idea's development (Yin, 2003).

I approached the analysis of each case without any preconceptions as to what the process of sharing an idea and developing it into an innovation outcome might entail.

As such, my research question was exploratory in nature. I also had no preconceived notions about how the sharing of an idea or its development into an innovation outcome might be indicated or enabled by language. Therefore, I approached my analysis from an interpretive perspective. Because of the interpretive nature of my analysis, and the potential for me to unintentionally impose bias on my analysis, I hired a research assistant to help me code my data. In this way, I was able to reduce interpretation bias by reconciling potentially different perspectives (Barley, 1996) of individuals' descriptions about sharing ideas and developing them into innovation outcomes and so improve the reliability of my analysis.

My research assistant and I adopted a grounded approach (Glaser & Strauss, 1967) and began with an in-depth analysis of each case where, as previously mentioned, each case consisted of a compilation of interview data relating to the sharing of an idea and its development into an innovation outcome. We looked first at the words and phrases individuals used in their descriptions about sharing ideas and developing them into innovation outcomes. We spent more than 70 hours in joint coding, memoing, definition-building (Miles & Huberman, 1984), and recoding (Barley, 1996). Following a rigorous regimen of constant comparison, discussion, and debate about we were observing in the data (Barley, 1996), my research assistant and I discovered patterns in how individuals described sharing ideas and developing them into innovation outcomes.

As we conducted our comparative analysis and developed analytic memos (Barley, 1996), we focused on individuals' involvement in the sharing process. While my data did not include observations of individuals' conversations, in each interview I asked individuals to recount conversations that they had engaged in with others. Given that I had accounts from both sides of the conversation, I was able to compare what individuals recalled saying about their ideas with accounts of what others recalled hearing. This gave me insight into what receivers understood about the ideas that had been shared with them.

As we coded the language used by each individual involved in sharing an idea and developing it into an innovation outcome, we observed the same patterns in individuals' language that we had found in an earlier study (see **Chapter 2**). As a result, we drew on the categorization scheme of individuals we had developed in that earlier

study, and then looked at how and why different types of individuals (Chapter 2) were able to share ideas and develop them into innovations.

After identifying that the individuals involved in the sharing and development process had either a *should-be* or *could-be* innovation orientation (Chapter 2), I found a relationship between individuals' innovation orientations and the types of ideas they initiated. I also discovered patterns in the language that idea initiators employed to share their ideas. Furthermore, I observed a relationship between individuals' innovation orientations and how they received and understood idea initiators' ideas. From this I generated a theoretical model about why and how some ideas are more readily shared and developed into innovation outcomes than others.

Results

The objective of my study was to explore why and how some ideas were more readily shared and developed into innovation outcomes than others. By analyzing the interview transcripts associated with the sharing of 22 ideas and their development into innovation outcomes, I discovered four different processes of sharing that led to the development of innovation outcomes. Two types of idea sharing occurred when idea initiators and idea receivers had the same innovation orientations; and two types of idea sharing occurred between idea initiators and idea receivers who had different innovation orientations (see **Tables 17 and 18a-d**). I also found that not all initiators were equally capable of sharing ideas and having them developed into innovation outcomes. I discuss these findings in detail below.

Should-be ideas shared with should-be receivers

Chris, a software development team lead, noticed that product developers at FutureSmart were regularly working extremely late nights in order to finish their software development tasks. While the tasks the developers were asked to do seemed reasonable, it seemed to take them an unreasonable amount of time to complete. Unhappy with the long hours, some good developers left the company. Chris calculated that it should be possible for the number of developers on the team to complete their

work during the normal workday, if the development process were simply made more efficient.

The company claimed to follow an agile product development process. Chris had learned about agile processes at university and had many friends who worked in organizations that employed agile processes. So Chris read more books on agile product development and attended an industry conference on the process. Based on this, he identified the areas where FutureSmart's processes needed to be improved. Given FutureSmart's size and the type of software it developed, Chris identified a list of changes that needed to be made in the development process for it to be optimized. He determined that the team leads needed to be certified to manage the agile process, regular meetings needed to be scheduled, and developers needed to perform regular tests on their code to eliminate errors, prior to sending the code to Quality Assurance.

Table 17.   Innovation Outcomes Developed through Sharing Ideas

Idea	Initiated by	Innovation Orientation	Shared with	Innovation Orientation
New development process	Chris	*Should-be*	Sam Ian	*Should-be* *Should-be*
Backup process	Victor	*Should-be*	Harry	*Should-be*
Monitoring system	Harry	*Should-be*	Victor	*Should-be*
New product	Glen	*Could-be*	Owen	*Could-be*
Adjacent products	Robert	*Could-be*	Ivan	*Could-be*
Sealing mechanism	Wayne	*Could-be*	Isaac Gerry Hayden	*Could-be* *Could-be* *Could-be*
New design	Wayne	*Could-be*	Hayden	*Could-be*
New device	Wayne	*Could-be*	Hayden	*Could-be*
Control interface	Nathan	*Could-be*	Hayden	*Could-be*
Portable device	Wayne	*Could-be*	Hayden	*Could-be*
Modified device for new market	Noel	*Could-be*	Wayne	*Could-be*
Order handling process	Gill	*Could-be*	Isaac	*Could-be*
Testing device	Isaac	*Could-be*	Wayne	*Could-be*

Idea	Initiated by	Innovation Orientation	Shared with	Innovation Orientation
Consulting services	Rowena	*Could-be*	Rick Dale Nate Ingrid	*Should-be* *Should-be* *Should-be* *Should-be*
New company	Nigel	*Could-be*	Zach	*Should-be*
Order management system	Nell	*Could-be*	Harry	*Should-be*
Fulfillment process	Nell	*Could-be*	Harry	*Should-be*
New application	Glen	*Could-be*	Ian	*Should-be*
New organizational structure	Glen	*Could-be*	Ian	*Should-be*
New product/ new market	Glen	*Could-be*	Hal	*Should-be*
Payroll automation	Sarah	*Should-be*	Liam	*Could-be*
Matrix structure	Dale	*Should-be*	Tom Nigel	*Could-be* *Could-be*

Table 18a.   Ideas Shared by Should-be Initiators with Should-be Receivers

Idea	Initiator (*orientation**)	Language used by initiator	Receiver (*orientation**)	Language heard by receiver
New development process (linear change - enhancement of existing process)	Chris (*should-be**)	I found that something that was standard across industry was this <u>scrum</u> master training. This would settle everyone on a particular framework as agile, this scrum framework	Sam (*should-be*)	… the role of the <u>scrum</u> master … is very similar to a project manager, but my main role there is just making sure that we're all following the process … Amazon, Google, Yahoo, they use scrum. I've also read about game companies that have a very, very tight deadline also using <u>scrum</u> successfully. That's pretty big for me
			Ian (*should-be*)	we started to look into a <u>scrum</u> process as an agile process. It's more a framework …We took some preliminary steps by introducing ... [a] daily huddle [where] everyone would answer: "what have you done for the past day?" …to make sure that everyone knows what you are working on

*identified in Paper 1

Table 18b.   Ideas Shared by Could-be Initiators with Could-be Receivers

Idea	Initiator (*orientation**)	Language used by initiator	Receiver (*orientation**)	Language heard by receiver
New sealing mechanism (groundbreaking change – new tool and new process)	Wayne (*could-be*)	we'd build something, then we'd test it, and we'd find it's <u>leaking</u>, and then we dissect it trying to find the source of the leak .... the biggest thing that solved it was … very simple <u>mechanical stuff</u> … we needed to apply <u>solid pressure over the [device]</u> …[we] stepped back and took a little bit more time in terms of <u>building</u> tools	Isaac (*could-be*)	this sample piece from one of the tradeshow booths ... if we could somehow <u>make this kind of [device]</u> … because of the way it was <u>put together</u> … It was made of <u>different materials that sealed together</u>
			Gerry (*could-be*)	How do you actually <u>make</u> something that has both the <u>properties, something that provides the structure, that's stiff, and then one that's soft and supple</u> that can fill in all the little dips and grooves
			Hayden (*could-be*)	[we tried] <u>different materials. We purchased different thicknesses and different textures of plastic, different compositions. We then pressed [it]</u> … to produce a [component] that's of <u>identical thickness all the way through and, more properly, there's no large holes, no surface defects, it's straight, flat, square and true</u>

*identified in Paper 1

Table 18c.   Ideas Shared by Should-be Initiators with Could-be Receivers

Idea	Initiator (*orientation**)	Language used by initiator	Receiver (*orientation**)	Language heard by receiver
Matrix structure (linear change – improvement of existing processes)	Dale (*should-be*)	[W]e've developed a lot of process for making our approach to those things more <u>consistent</u> ...[E]very project was doing what it wanted to do with whatever particular <u>standards</u> the processes and techniques it chose to adopt. It was very difficult to try and compare Project A and Project B in terms of success	Tom (*could-be*)	They have the <u>same responsibility. How they execute those responsibilities differs</u> ... We try and standardize, in terms of the way we report, but it's <u>very difficult because TopCo doesn't standardize</u> the way it runs its programs.
		We've got <u>a project management</u> practice, a business analysis practice, software engineering practice ... technical writing group, and testing and quality control group. [Area managers] have a relationship with <u>the project manager</u> in terms of assigning resources.	Nigel (*could-be*)	The matrix structure is turning the dial to be more <u>program managers</u>, have a little more say of how their career is progressing … [but we need] clarity on what the roles and responsibilities are ... It's like <u>"who's your daddy?"</u>

* identified in Paper 1

Table 18d.   Ideas Shared by Could-be Initiators with Should-be Receivers

Idea	Initiator (*orientation**)	Language used by initiator	Receiver (*orientation**)	Language heard by receiver
Consulting services (groundbreaking change – new combination of resources)	Rowena (*could-be*)	It's a <u>huge opportunity</u> for TopCo … it's huge for TopCo … What we present is ourselves, being somebody in the middle, bringing the two sides together ... in the middle of this collaborative information sharing … We are that collaborative portal that's going to pull all this together … We're creating a <u>collaborative information environment</u> … <u>We don't know what's happening in 2010</u>	Rick (*should-be*)	If you look at our forecast for next year, 2010, …it's 10% of where it needs to be <u>... A normal business … would not be sitting with just 10% of it's opportunities identified</u> for next year … We're developing a … world class <u>collaborative information environment</u> [where] everybody has perspective in terms of what we're doing
		I can't say to you that <u>I need a Java-skilled programmer</u> or anything. I just need people to be able to buy into this concept	Dale (*should-be*)	[it] makes sense to at least consider what the relationship is of the [existing structure] to the [new division] … because they need project managers, so they need <u>business analysis, they need ultimately, software engineering</u>
		We looked at that. OK … why can't we <u>transition [our commercial model]</u>, because that's what we want to do with [this opportunity], to <u>move that into a [related] operation?</u>	Nate (*should-be*)	Taking what [we] know about managing logistics and [commercial] systems and seeing <u>whether they can apply them to adjacent industries</u>. We're working … to try and find where those things fit.
		[look] at [this role] from the perspective ... of <u>risk, schedules, budget</u>, etc.	Ingrid (*should-be*)	I've always been in <u>accounting and finance</u> … I'd like to … use the skill set. … I want to understand operations better … I took a couple of <u>courses … I started to look into project management</u> and … [it's] a really good transition over

* identified in Paper 1

Chris, however, was only one of the team leads at FutureSmart. To properly implement the improved agile process, Chris needed his manager, Sam, the senior developer, to approve certification training, to schedule daily meetings for all developers, and to require developers to perform quality tests. Also, Chris needed the other team lead, Ian, responsible for development of the user interface, to adopt the changed process.

Chris told Sam and Ian that the improved process was used by some of the software industries' largest and most successful players. He informed them of the

requirement to build in daily meetings, but stressed that the certification training would ensure they implemented the process correctly.

Individuals with a s*hould-be* orientation initiate linear ideas

Across my sample of cases, I found that individuals with a *should-be* innovation orientation initiated linear ideas for addressing the challenges they encountered in their work. I defined linear changes as relating to improving and enhancing existing processes, systems or products in the organization. In the above-mentioned case, Chris's idea was to improve the existing development process through formalization and standardization. Another linear idea that enhanced an existing product was the modified web-feature that Hal, the sales director at FutureSmart, initiated. The monitoring system that was built on top of and improved FutureSmart's existing IT system was conceptualized by Harry, the operations director at FutureSmart, and is further example of a linear idea.

Sharing *should-be* ideas with *should-be* receivers requires common words

Chris's idea of an improved product development process in FutureSmart (described above) is an exemplary case of a linear idea being shared between an initiator with a *should-be* innovation orientation and receiving individuals with *should-be* innovation orientations.

My analysis revealed that the way Chris talked about his idea for an enhanced product development process was related to his *should-be* innovation orientation (Chapter 2). Chris talked about the enhanced process in terms of it being 'right' and legitimate; of being adopted by leaders in the industry; and of it fixing a failure in the organization's current *ad hoc* process.

In sharing the idea with the two other people whose support he needed to implement the process, Chris described the improved process in this way:

> *I found that something that was standard across industry was this scrum master training. This would settle everyone on a particular framework as agile, this scrum framework.*

Sam, who also had a *should-be* innovation orientation, understood Chris's idea in these terms:

> *… the role of the scrum master … is very similar to a project manager, but my main role there is just making sure that we're all following the process … Amazon, Google, Yahoo, they use scrum. I've also read about game companies that have a very, very tight deadline also using scrum successfully. That's pretty big for me.*

I found that Sam accepted Chris's idea because he already had in his vocabulary the words Chris employed to describe his idea i.e. the word "scrum." As a result, Sam understood Chris's language. Furthermore, Sam shared Chris's connotation of the word "scrum", i.e. of it being a recognized, legitimate process adopted by leaders in the industry that would improve the *ad hoc* nature of the current process.

I found that, Ian, who also had a *should-be* innovation orientation, also understood and accepted Chris's idea for an improved process when Chris used the word "scrum." Evidence of this is provided in Ian's explanation of his support for Chris's idea:

> *[W]e started to look into a scrum process as an agile process. It's more a framework …We took some preliminary steps by introducing ... [a] daily huddle [where] everyone would answer: "What have you done for the past day?" …to make sure that everyone knows what you are working on.*

Ian, like Sam, understood and accepted Chris's idea because Ian had the word "scrum" in his vocabulary. Ian also shared Chris's connotations of the word "scrum", i.e. that it provided certainty with respect to being a proven process that would increase certainty through knowledge-sharing.

Could-be ideas shared with could-be receivers

Wayne's idea of building a new sealing mechanism at ParadigmShift (described at the beginning of this chapter) is an exemplary case of a groundbreaking idea generated in response to a work-related challenge, communicated between an initiator with a *could-be* innovation orientation to a team of individuals with *could-be* innovation orientations.

Individuals with a *could-be* orientation initiate groundbreaking ideas

Across our sample of cases, I found that individuals with a *could-be* innovation orientation initiated groundbreaking ideas in response to challenges they encountered as they went about their work. I defined groundbreaking challenges as relating to creating or building new processes, systems, tools or products in the organization through recombination or by starting from scratch. In Wayne's case, his idea was to create a brand new tool that had never before been produced by the organization. Another groundbreaking idea was the new order management system that Nell, the customer relationship manager at FutureSmart, initiated. The new product conceptualized by Glen, the co-founder of FutureSmart, that recombined and introduced new components to the organization's existing set of offerings, is another example of a groundbreaking idea.

Sharing *could-be* ideas with *could-be* receivers requires common connotations

By focusing on the language employed by Wayne to explain his idea, and the language used by Isaac, Gerry and Hayden to describe the idea that they were involved in developing, I found that the process by which the idea was shared related to the connotations used in the sharing process.

My analysis revealed that Wayne spoke about his idea for a new sealing mechanism by employing language related to his *could-be* innovation orientation. Given his innovation orientation, Wayne talked about his idea in terms of its usefulness and purpose; of it involving learning and failure; and of there being numerous potential ways of approaching the leaking problem.

In sharing the idea with the other people whose help he needed to develop the solution, Wayne described it using these terms:

> *[W]e'd build something, then we'd test it, and we'd find it's leaking, and then we dissect it trying to find the source of the leak .... the biggest thing that solved it was … very simple mechanical stuff … we needed to apply solid pressure over the [device] …[we] stepped back and took a little bit more time in terms of building tools.*

Isaac, who also had a *could-be* innovation orientation, understood Wayne's idea in these terms:

[T]his sample piece from one of the tradeshow booths ... if we could
somehow make this kind of [device] … because of the way it was put
together … It was made of different materials that sealed together.

Nowhere in Isaac's description of the process of developing the new sealing
mechanism, or in the descriptions of other development processes in which he was
involved, did he use the words "building tools" or "mechanical stuff". I found, instead, that
Isaac understood and accepted Wayne's idea because his language contained words
that had the same *connotations* as Wayne's words. Therefore, while Wayne used the
words "building tools," and "mechanical stuff," it seemed that Isaac understood "make"
and "materials that sealed together". Thus, although Wayne and Isaac had somewhat
different words in their vocabularies, they shared connotations relating to there being
many options, learning through experience, and building useful and purposeful solutions.

Gerry, who also had a *could-be* innovation orientation, understood Wayne's idea
in these terms:

How do you actually make something that has both the properties,
something that provides the structure, that's stiff, and then one that's soft
and supple that can fill in all the little dips and grooves?

Nowhere in Gerry's description of developing the new sealing mechanism, or in
the descriptions of other development processes in which he was involved, did Gerry
use Wayne's words. I discovered, instead, that Gerry understood and accepted Wayne's
idea because his vocabulary, too, contained words with the same connotations as
Wayne's words. Therefore, it seemed that Gerry understood "building tools" and
"mechanical stuff" because his vocabulary contained words with connotations of
"building" and "materials" relating to there being many options, learning through
experience, and creating.

Hayden, too, had a *could-be* innovation orientation. He understood Wayne's idea
in these terms:

[We tried] different materials. We purchased different thicknesses and
different textures of plastic, different compositions. We then pressed [it] …
to produce a [component] that's of identical thickness all the way through

and, more properly, there's no large holes, no surface defects, it's
straight, flat, square ….

Again, I found that Hayden's vocabulary did not seem to include Wayne's words. Hayden, however, understood and accepted Wayne's idea because his vocabulary, too, contained words with connotations relating to there being many options, building and creating, experience and learning, and focusing on outcomes.

The process by which Wayne's idea was shared, therefore, was different to the process by which Chris's idea was shared. Chris talked about his idea using <u>words</u> that receivers had in their vocabularies. Wayne, on the other hand, used words that were understood by receivers because they had similar <u>connotations</u> in their language.

Should-be ideas shared with could-be receivers

Between 2001 and 2006, Dale, senior leader at GreatInsight, had helped the organization grow from a 14-person start-up, recently acquired by TopCo, to over 100 people. When TopCo, a leading multinational transportation equipment manufacturer, bought GreatInsight in 2000, it was for its equipment maintenance software products. However, after the acquisition, Dale saw the company change its focus from its own product development to developing software for existing TopCo products and for other TopCo projects. Dale found that leading a software development team in the mid-2000s meant that he was constantly under pressure to explain how his team's services competed with software developers in India and Vietnam in terms of price and quality.

After a comment by a board member about GreatInsight needing to be competitive on quality and cost, Dale identified that the Capability Maturity Model Integration (CMMI) developed by Carnegie-Mellon University would help optimize GreatInsight's processes and efficiency, and make them competitive against developers in Asia. Dale mapped out the process to achieve CMMI level 5 maturity by 2010, by which time GreatInsight would need to have attained industry-leading levels of efficiency, quality and repeatability. Dale identified that making project management efficient and repeatable, so that skills across projects could be standardized and, as a result, quality and cost could be controlled, required formalizing the project management division as a matrix structure.

This formalization would require big changes to reporting relationships. Developers would be hired, put on projects, and be measured with respect to project specifications by project managers. Developers' career paths would be managed by practice leaders. Selling the idea to the rest of the executives and senior managers was essential if around 70% of the company was going to be reorganized in this way, and if the remaining 30% were to support this new structure administratively. Dale organized a series of sessions in the big conference room and invited everyone to attend. In the sessions, Dale introduced the matrix structure, the responsibilities that developers would have, and under what circumstances they would talk to their project manager or their practice manager. He explained why putting the matrix structure in place was a good idea, and that it would make things better for the developers. Dale's matrix structure was rolled out in 2005.

Sharing *should-be* ideas with *could-be* receivers requires common connotations

The development of a matrix structure in GreatInsight is an exemplary case of a linear idea being shared between an initiator with a *should-be* innovation orientation and receiving individuals with *could-be* innovation orientations. The matrix structure was a linear idea because it formalized GreatInsight's project management process and built on top of and improved the organization's existing resources, developed in response to a work-related challenge. Like in Wayne's case, where his idea was shared with *could-be* receivers, I found that Dale's idea sharing process involved employing <u>connotations</u> that were familiar to receivers.

I found that Dale spoke about his idea for a matrix structure using language related to his *should-be* innovation orientation. He used words and phrases relating to being 'right' and legitimate, to leaders in the industry, and to fixing a failure in the organization's current *ad hoc* process:

> [M]y goal … was to go into what in project management terms is called a resource assignment matrix …. We need to understand what our competition is out there … We would also have to develop our structure so that we could start driving process improvements … We had to start getting some organizational maturity in place to handle that kind of growth … companies in India are all saying that they are CMMI Level 5 and they're ISO9001 ... it was decided to head this company toward CMMI Level 5 as an initiative.

Although Dale had a *should-be* innovation orientation, his sharing process was similar to Wayne's in that the receivers of Dale's idea seemed to hear and understand the idea by drawing on their own connotations of the words that Dale used in his idea description. Thus, Dale described sharing his idea by employing words that had existing connotations in receivers' language. As a result, I found that receivers' connotations of the words Dale used seemed completely different to Dale's connotations of those words. Furthermore, I found there to be a strong relationship between the receivers and the connotations that they understood when Dale shared his idea.

Tom, a senior project manager and one of the key individuals who would be directly affected by the introduction of the matrix structure, had a *could-be* innovation orientation. In his interview, Tom spoke consistently of usefulness and purpose, of experience, of there being numerous potential ways of managing projects, and about outcomes. As a result of his innovation orientation, I found that when Dale said,

> *I'd say the key thing … is that we've developed a lot of process for making our approach to those things more consistent. At one point in time, you could say pretty much every project was doing what it wanted to do with whatever particular standards the processes and techniques it chose to adopt. It was very difficult to try and compare Project A and Project B in terms of success,*

Tom heard,

> *They have the same responsibility. How they execute those responsibilities differs ... We try and standardize, in terms of the way we report, but it's very difficult because TopCo doesn't standardize the way it runs its programs. My key role is to maintain customer relations, and help project managers with those customers.*

In other words, while Dale was describing a process to improve the *ad hoc* process by which GreatInsight managed its projects, Tom seemed to understand the idea to relate to incorporating a standardized reporting element into an inherently *ad hoc* process that needed to be adjusted based on emerging and changing circumstances.

Neither in Tom's description of developing the new matrix structure, nor in his descriptions of other development processes in which he was involved, did he use the words "consistent" or "project standards". Nonetheless, Tom understood and accepted

Dale's idea because his vocabulary contained words with the same connotations as Dale's words (i.e. "standardize"), but interpreted the word based on his own innovation orientation. Therefore, Tom understood "consistent" and "standards", because his vocabulary contained related words, but interpreted these words in terms of usefulness and purpose, experience, and in terms of there being numerous potential ways of managing projects and outcomes.

By using words that had connotations in Tom's language related to his innovation orientation, Dale was able to bring Tom on board and to get him to participate in the development of the idea. However, because their words had different connotations, the two effectively understood the idea completely differently. Throughout the development process, Dale spoke of implementing a linear change, while Tom spoke of emerging opportunities that involved dynamic and evolving decision-making. Yet both were able to work together effectively and participate in the development of the idea into a new matrix structure that was aligned with their own innovation orientations.

Nigel, a senior executive at GreatInsight with a *could-be* innovation orientation also heard and understood Dale's idea for a matrix structure because the words Dale used words in his description had connotations in Nigel's language relating to his innovation orientation. For example, when Dale pitched his idea to the executive team, explaining that developers would be moving to a structure that involved reporting to both project managers and practice leaders, Nigel heard,

> *The matrix structure is turning the dial to focus on program managers [but now developers] have a little more say of how their career is progressing … [but we need] clarity on what the roles and responsibilities are ... It's like "who's your daddy?"*

Even though Nigel's response to Dale's idea was not overtly positive, Dale's idea caught Nigel's attention because Dale was proposing an idea that resonated with Nigel, who felt great responsibility for providing GreatInsight employees' with career paths that would enable them to seize opportunities and grow as they helped GreatInsight grow. Therefore, Dale's mention of employees having two managers caught Nigel's attention. However, despite his concerns and in line with this innovation orientation, Nigel understood Dale's idea to relate to organizational growth, and creating new structures

focused specifically on employees' growth. As such, Nigel assigned his own connotations to Dale's words. Again, Dale was able to earn Nigel's support for the development of the matrix structure, even though the two effectively understood Dale's idea completely differently.

This seemed to echo my previous finding that ideas are shared with *could-be* receivers and developed into innovation outcomes when initiators employ words in their descriptions for which receivers have connotations in their language related to their innovation orientation.

Could-be ideas shared with should-be receivers

Rowena also worked for software development company, GreatInsight. She was deployed as a project manager to a specialized division of TopCo, GreatInsight's parent company and one of the world's largest transportation equipment-manufacturing firms. In this division, Rowena became aware of a new business opportunity available to TopCo; one that GreatInsight could be instrumental in securing for TopCo. Helping TopCo pursue this opportunity meant rearranging and repurposing the skills and processes already developed by GreatInsight, into product and service offerings beyond those currently offered to TopCo. Furthermore, because the TopCo opportunity was still vague, it was not clear what specific role GreatInsight might play. Rowena believed, however, that GreatInsight's unique skills and characteristics meant it could play a variety of roles that would maximize the revenue opportunity for both GreatInsight and TopCo.

Previously, in her role as project manager in the specialized division of TopCo, Rowena worked alongside Rick, a management consultant to TopCo. Rowena mentioned to Rick the opportunity she had identified, and her idea of how GreatInsight could work with TopCo to pursue and win the new business she anticipated. Rick recognized the potential value of Rowena's insights and offered to work with her to pitch her idea to the GreatInsight executive team. He agreed to help her propose to the executives that they set up a new service division consisting of a different arrangement of skills and services than were currently offered by GreatInsight.

Together, Rick and Rowena developed a business plan for a new GreatInsight service offering that they pitched to the executive team. The services proposed by Rick

and Rowena meant engaging with TopCo in new ways, which made some of the executives uneasy. The executive team was hesitant about putting together a different kind of team to those that currently existed at GreatInsight; and although the upside of the opportunity was large, the ambiguity surrounding the whole venture was unsettling for a few members of the executive team. Nonetheless, Rick and Rowena's proposal was championed by a key member of the executive team and eventually approved. The new service offering was designated as a separate consulting division of GreatInsight, and Rick and Rowena began recruiting team members to work with them and TopCo on identifying, clarifying and pursuing the emerging opportunity.

Sharing *could-be* ideas with *should-be* receivers requires common words

The development of a new consulting service in GreatInsight is an exemplary case of a groundbreaking idea generated by a challenge (in this case an opportunity) being shared between a *could-be* initiator and *should-be* receivers. The new consulting service was a groundbreaking idea because it rearranged GreatInsight's existing skills and resources and represented a brand new service offering. Like in Chris's case, where his idea was shared with *should-be* receivers, I found that Rowena's idea sharing process involved employing <u>words</u> that were familiar to receivers.

I found that Rowena spoke about her new consulting service idea using language related to her *could-be* innovation orientation. She used words and phrases relating to opportunities and possibilities, learning from experience, and going beyond what already exists:

> *We're creating a [division], to help execute a business model that currently does not exist … there's potential that 2017 there can be a huge opportunity for us, if we can get this right. We get in there, we learn about the [end-user's] systems, become the experts. Why wouldn't we?*

In stark contrast to how Wayne shared his idea with his *could-b*e idea receivers by simply drawing on shared connotations without paying particular attention to the words in receivers' vocabularies, Rowena described sharing her idea with others using words that existed in receivers' vocabularies. Despite this, I found that the words Rowena used to describe her ideas seemed to have completely different connotations for her and her receivers. In addition, I found there to be a strong relationship between

the words that Rowena used when sharing her idea and the particular individuals with whom she shared it.

Rick, Rowena's partner in the development of her idea into an organizational innovation, had a *should-be* innovation orientation. Rick's descriptions spoke consistently of the 'right' way to do things, being legitimate, fixing and preventing failures, working with existing resources, and ensuring that the outcomes of expected actions were known and could be controlled. As a result of his innovation orientation, I found that when Rowena said,

> *It's a huge opportunity for TopCo … it's huge for TopCo … What we present is ourselves, being somebody in the middle, bringing the two sides together ... in the middle of this collaborative information sharing … We are that collaborative portal that's going to pull all this together … We're creating a collaborative information environment … We don't know what's happening in 2010,*

Rick heard and understood the words he already had in his vocabulary, and that related to his innovation orientation. Therefore, I discovered that Rick heard,

> *If you look at our forecast for next year, 2010, …it's 10% of where it needs to be ... A normal business … would not be sitting with just 10% of its opportunities identified for next year … We're developing a … world class collaborative information environment [where] everybody has perspective in terms of what we're doing.*

In other words, while Rowena was pursuing an emerging, uncertain opportunity to work in a new capacity as a partner with TopCo to develop still-to-be-determined solutions, Rick seemed to understand the idea to relate to fixing GreatInsight's forecasting process which, if it were working 'correctly,' should have defined and calculated its known short-term opportunities.

Rowena was able to find and use words that existed and had meaning in Rick's vocabulary in terms of his innovation orientation, in order to bring him on board and to get him to participate in the development of the idea. Despite the use of common words, however, the partners effectively understood the idea completely differently. Throughout the development process, Rowena spoke of creating a groundbreaking change, while Rick spoke of applying a known and familiar process for the purposes of fixing a process

failure. Both were able to participate in the development of the idea into a new service offering in line with their own innovation orientations. As a result, the partners were able to work together effectively to develop the new service offering.

Similarly, Dale, Nate and Ingrid all heard and understood Rowena's idea in their own terms, because she shared it using words that each of them individually already had in their vocabularies, and that related to their innovation orientations. I found that these receivers heard her idea despite her deliberately presenting it in negative terms. For example, when Rowena presented the idea to Dale she said,

> *I can't say to you that I need a Java-skilled programmer or anything. I just need people to be able to buy into this concept.*

She caught his attention because she was proposing an idea that was related to him (i.e. "Java-skilled programmer"). Since he was the project director at GreatInsight, his entire job related to assigning people with different skills (e.g. Java) to development projects. Rowena's mention of needing individuals and of Java-skilled programmers meant to Dale that her idea involved people and skills, thereby earning her his attention. Dale's participation in the development of Rowena's idea involved determining how its project needs would be accommodated within GreatInsight's existing project management structure. As such, Dale understood Rowena's project to involve linear change on his part, and therefore aligned to his innovation orientation. Again, Dale and Rowena were able to work together on developing GreatInsight's new service offering, despite understanding it completely differently and having different connotations for the words that described it.

This seemed to echo my previous finding that ideas that were shared with individuals with *should-be* orientations were understood and developed into innovation outcomes when they were shared using words that receivers had in their vocabularies, and that related to their innovation orientations.

Within and across orientation sharing and framing

Thirteen of the 22 innovation outcomes in my sample were developed as a result of idea initiators sharing their ideas with individuals who shared their own innovation

orientations (refer to **Table 17**). Sharing ideas with others with the same innovation orientation (i.e. 'sharing within innovation orientation') therefore seemed somewhat easier to accomplish.

My analysis suggested that individuals with a *should-be* innovation orientation employed known <u>words</u>, relating to correct process and legitimacy, following leaders in the industry, and fixing failure. Therefore, I found that when initiators with a *should-be* innovation orientation shared their ideas with *should-be* receivers, their ideas were generally understood because receivers already had in their vocabularies the words employed to describe the idea.

My analysis also indicated that individuals with a *could-be* innovation orientation employed words with existing, known <u>connotations</u> relating to creating, pursuing possibilities and opportunities, usefulness and purpose, and learning through failure and experience. Therefore, I found that when initiators with a *could-be* orientation shared their ideas with *could-be* receivers, their ideas were generally understood because receivers already had their own connotations for the words used to describe the idea.

However, sharing ideas with receivers whose innovation orientation differed from the receiver's innovation orientation (i.e. 'sharing across innovation orientations') seemed completely different and more difficult to accomplish. Although sharing across innovation orientations occurred as a result of shared familiar language, initiators needed to first perceive that receivers did not share their approach to innovation. Then *should-be* initiators had to find and employ in the descriptions of their ideas words that *could-be* receivers knew and would understand in terms of their own connotations (relating to creating, pursuing possibilities and opportunities, usefulness and purpose, and learning through failure and experience). *Could-be* initiators had to find and employ in the descriptions of their ideas words relating to correct process and legitimacy, following leaders in the industry, and fixing failures that individuals with a *should-be* innovation orientation knew and already had in their vocabularies.

I found several instances where *should-be* individuals mentioned trying to share ideas that were <u>not</u> heard or were ignored by receivers. Sarah, for example, explained

that she had repeatedly tried to share her ideas for improving the efficiency and consistency of the payroll process with Nigel, but without success:

> [E]verything was manual, everything was spreadsheets. I was in our timekeeping system … It was pretty frustrating …. It isn't so much getting it approved, because Liam is always on board… it's actually getting [Nigel's department] to figure out how to do … that is still a frustration today … the focus is still on the developers and the business analysts, and everyone else outside of admin.

I also found several instances where *could-be* individuals mentioned trying to share ideas that were not heard or were ignored by receivers. Nell, for example, explained that she had repeatedly tried to share her ideas of making more useful reports with Chris and Ian, but to no avail:

> I find, over the course of using the system … that it's working as designed but it doesn't make sense. These customers rely a lot of their reports. Because these devices, most of them, like the [commercial] devices, they bought them for productivity … We always want to make sure that all the [are] very easy to understand. Because sometimes it's not. That's one of the things that I constantly bug the product team about.

Because finding and employing language that would lead to understanding was critical to 'across orientation' sharing, I theorized that initiators would need to know receivers well in order to be able to pick up and employ their words and language. To explore the circumstances under which individuals might be successful in sharing their ideas with receivers who had different orientations to their own, I analyzed the working relationships of the individuals in my study.

I found that the *should-be* initiators in my study who had successfully shared their ideas with *could-be* receivers shared close working relationships with these receivers. I found that several *should-be* initiators had successfully shared their ideas with *could-be* receivers who held positions of higher authority in the organization. I also found that *could-be* initiators who had successfully shared their ideas with *should-be* receivers also shared close working relationships with these receivers. I found that several *could-be* initiators had successfully shared their ideas with *should-be* receivers who held positions of higher authority in the organization. This suggested that close working relationships, even where these relationships spanned multiple levels of authority, might give

perceptive initiators insight into the words that (potential) receivers had in their vocabularies, and for which receivers had their own connotations, related to their innovation orientations[5].

However, I found that not all individuals with different innovation orientations who shared close working relationships engaged in 'across orientation' idea sharing or development. This suggested that not all *should-be* initiators were equally capable of finding and employing words for which *could-be* receivers had connotations in their language; nor that all *could-be* initiators were equally capable of finding and employing words to describe their ideas that receivers had in their vocabularies. I referred to the act of finding and employing words that existed in receivers' vocabularies or had connotations in their language, and that related to receivers' innovation orientations, as: *framing* (Benford & Snow, 2000), and found that not all individuals were equally capable of framing their ideas in others' language.

Unintentional vs. intentional framing

My analysis also suggested that not all framing was intentional. Dale presented his idea as improving the *ad hoc* nature of the organization's existing process. Neither Tom nor Nigel did not understand Dale's idea in these terms. Throughout Tom's and Nigel's transcripts they mentioned the possibilities arising from emerging situations, experience and learning. I found no evidence to support the idea that Dale attempted to frame his idea in these terms. Therefore, Dale's choice of words for which Tom and Nigel had connotations in their language seemed largely unintentional (what I refer to as 'unintentional framing'). Despite this, and as a result of the words Dale used, Tom and Nigel understood Dale's idea and supported its development into an innovation outcome (the matrix structure).

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[5]   I conducted a correspondence analysis on the words used by the individuals in each organization. The results support my proposition that individuals with close working relationships who engage in successful 'across orientations' sharing and innovation development use the same words when talking about innovating (see Appendix C for the results of my correspondence analysis for FutureSmart).

Similarly, numerous statements by Rowena described her idea as arising from an emerging, uncertain opportunity, and requiring solutions that did not currently exist in the organization. My analysis found that no *should-be* individuals had similar ideas or connotations in their vocabularies. Despite this, Rowena was continuously able to describe her idea using words that were in the transcripts of many of the *should-be* individuals with whom she worked closely. It seemed that her choice of words, then, was largely accidental, but enabled by the close working relationships she shared with many potential *should-be* receivers. Despite being probably unintentional, Rowena's choice of words that were familiar to *should-be* receivers led to the successful sharing of her idea and its subsequent development into an innovation outcome.

By contrast, other idea initiators seemed to use familiar words far more purposefully (what I call 'intentional framing'). For example, when Glen (who had a *could-be* innovation orientation) tried to gain support for his idea to reorganize FutureSmart under a new organizational structure, he paid attention to the concerns (and particularly to the words used to describe the concerns) of the team leaders whose support he needed for the idea's development. Gaining the support of the team leaders was integral for the adoption of the new structure that would support the development of a new product that Glen was planning. To gain their support, Glen observed that Ian had the following concern:

> [W]e have a lot of different products that we support and so between each one … we want to make sure that everyone is quite versed in certain areas. But unfortunately, that's not so much the case so we actually have to context switch a lot.

As a result, when Glen shared his idea for a new organizational structure with Ian, he said,

> [O]n Monday, developer A is working on a product A, on Tuesday he's working on product B, on Wednesday and Thursday he's working on C, and on Friday he's coming back to A. So they're thrashing constantly, and because we're context-switching all the time … there's going to be an architecture team and each of those team members have primary responsibilities on other teams.

As a result of Glen's deliberate framing of his idea in words that were familiar to Ian, Ian heard Glen's idea. Although Glen understood his idea to be groundbreaking, Ian interpreted it as fixing a failed development process that involved constant context-switching. Therefore, Ian supported Glen's idea and participated in its development, even though his participation in it focused on fixing the failure in the current process, rather than on creating a new organizational structure. Thus, while both individuals had different understandings of the innovation outcome they were developing, they worked effectively together in alignment with their innovation orientations.

Discussion

In this study I set out to explore why and how some ideas are more readily shared and developed into innovations than others. As a result of my analysis of the language employed by individuals when they talked about developing ideas into innovations, I propose that ideas are shared when the language used by initiators to describe their ideas is heard and understood by receivers (see **Figure 4**).

Figure 4.   ***Theoretical Model of Why and How Ideas are Shared and Developed into Innovations***
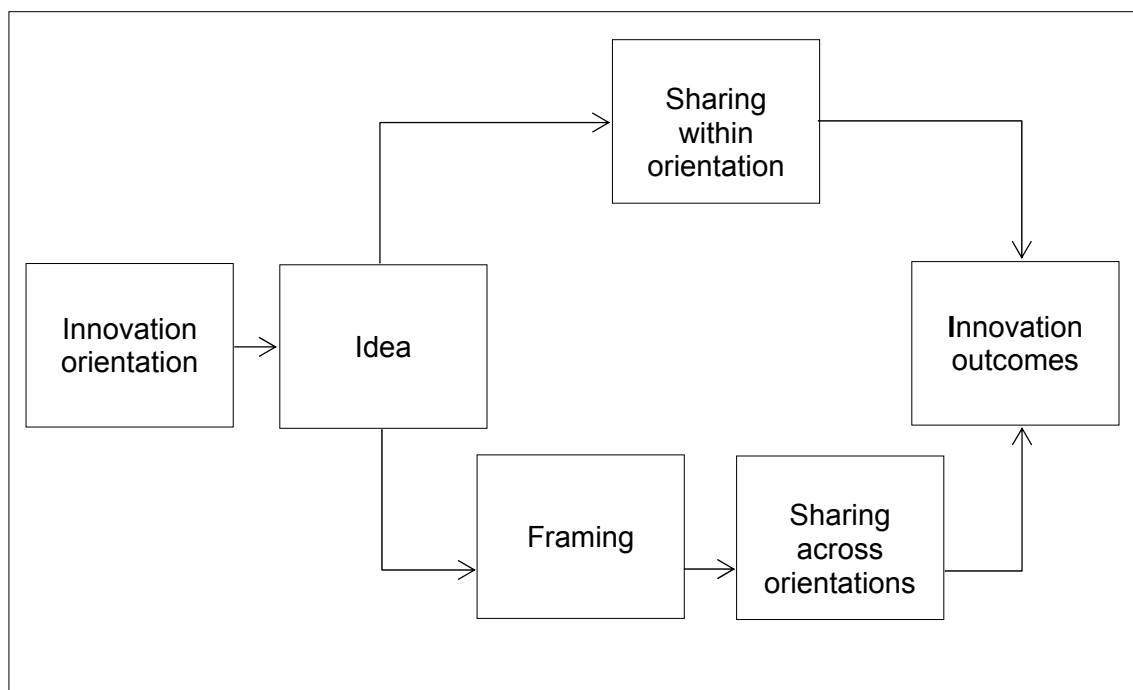
Based on my findings, I propose that the sharing can be separated into two sets of sharing processes that differ depending on whether the initiators and receivers have the same or different innovation orientations. These sets of processes are represented diagrammatically in **Figure 5**.

'Within orientation' sharing

The first set of processes involves 'within orientation' sharing, and relates to initiators sharing ideas with individuals who have the same innovation orientations. I propose that *should-be* ideas are more easily understood and accepted by *should-be* receivers when initiators use common words that are understood by receivers to describe their ideas. In addition, I propose that *could-be* ideas are more easily understood and accepted by *could-be* receivers when initiators describe their ideas using words for which hold common connotations for receivers.

Figure 5. ***How Individuals Share Ideas within and across Innovation Orientations***

'Across orientation' sharing

The second set of processes involves 'across orientation' sharing, which relates to sharing ideas between initiators and receivers who have different innovation orientations. I suggest the 'across orientation' sharing occurs when idea initiators frame their ideas (either intentionally or unintentionally) employing language that is familiar to idea receivers.

I propose that ideas shared by *should-be* initiators are understood by *could-be* receivers when initiators describe their ideas using particular words with connotations that are familiar to receivers. Therefore, ideas shared by *should-be* initiators are generally understood by *could-be* receivers when ideas are framed using words for which receivers have known connotations that align with their orientations. *Should-be* ideas are more likely to be shared with *could-be* receivers when they are framed using words for which receivers have connotations relating to creating, pursuing possibilities and opportunities, usefulness and purpose, and learning through failure and experience.

Furthermore, ideas shared by *could-be* initiators are generally understood by *should-be* receivers when initiators describe their ideas using specially chosen words that are familiar to idea receivers. *Could-be* ideas are more likely to be shared with *should-be* receivers when they are framed using words that are familiar to the receivers and that align with their innovation orientation. Thus, *could-be* ideas are more likely to be shared with *should-be* receivers when they are framed in terms of correct process, legitimacy, following leaders in the industry, and fixing failures using words that already exist in receivers' vocabularies.

Not all initiators are able to frame or develop ideas into innovations

Not all idea initiators are able to frame their ideas in the language of receivers with a different innovation orientation. I called initiators who *are* able to frame their ideas: versatile. I propose, then, that versatile individuals who are able to frame their ideas in language that is understandable to receivers are more likely to have their ideas understood, supported and developed into innovation outcomes. I propose that initiators who are unable to frame their ideas in the language of receivers who have a different

innovation orientation will have their ideas ignored or rejected by receivers. These ideas will not be developed into innovation outcomes.

Implications for theory

The dominant view among organizational theorists is that sharing knowledge <u>between</u> groups is a key requirement for innovation (Gibson, 2001; Hargadon & Fanelli, 2002; Hargadon & Bechky, 2006; Hinds & Bailey, 2003; Leonard, 1995; Obstfeld, 2005). However, I propose that innovation may also occur <u>within</u> a single group, i.e. in situations where two individuals share the same innovation orientations, even though group members have in common the same knowledge and language. I contribute the idea that new ideas related to initiators' orientations are generally readily shared with receivers with the same orientation as a result of easily understood, common words.

Thus, I propose that common language might, indeed, be necessary and sufficient for innovation to occur (cf. Carlile, 2004). When diverse parties (i.e. individuals with different innovation orientations, and thus different knowledge and language) interact, sharing occurs when the words employed by both parties are the same. Idea initiators who frame their ideas in language that is known and familiar to receivers are more likely to have their ideas understood and accepted by receivers, and developed into innovation outcomes. In the absence of familiar language, initiators' ideas are most likely to be ignored. This resonates with Hargadon and Douglas's (2001) concept of using mimicry to ensure the acceptance of new ideas. These authors suggest that ideas are accepted when initiators relate them to known concepts. I argue, though, that the use of familiar words goes beyond giving the receivers' of new ideas comfort with something unfamiliar. Instead, I propose that framing new ideas in familiar terms has more do to with perception bias, which means that individuals identify and attend to ideas that are meaningful to them; and cognitive bias, which means that individuals notice words that address issues that solve problems that they have already identified.

Finally, while organizational theory suggests innovation happens as a result of power differences between the groups sharing and receiving ideas (Carlile, 2004; Sewell, 1992), I propose that power might be less important than common language. I contribute the finding that framing ideas in language that is known to receivers is more

likely to relate to the successful development of an idea into an innovation outcome, than the power of the initiator relative to the idea receiver. The notion of purposefully and politically framing ideas in language that resonates with a target audience is well accepted in the fields of consumer psychology and marketing (see Cesario, Grant, & Higgins, 2004; Cesario, Higgins, & Scholer, 2008; Lee & Aaker, 2004) and organization studies (e.g. Benford & Snow, 2000; Dutton & Dukerich, 1991; Rao, Monin, & Durand, 2003; Zilber, 2002). However, I contribute to the conversation the idea that framing is not always or necessarily intentional; but seemingly essential for new ideas to be adopted and developed into innovations.

Implications for practice

Based on my analysis I submit two recommendations for managers. First, I propose that managers align their expectations with respect to individuals' abilities to generate ideas with individuals' innovation orientations. S*hould-be* individuals are much less likely to initiate groundbreaking ideas, and *could-be* individuals are much less likely to initiate linear ideas. Managers can assess individuals' innovation orientations quickly using a regulatory focus survey (see **Chapter 3**), and then define innovation tasks, rewards and incentives in line with individuals' innovation orientations in order to maintain individuals' morale and encourage participation in the development of (individuals' own and other) ideas into innovation outcomes.

Second, I propose that managers attend to the organizational positions in which they place versatile individuals. Versatile individuals have special abilities related to initiating and framing ideas so that their ideas may be shared with individuals with different orientations. Managers should place versatile individuals in connecting positions at the intersections between roles, divisions and organizations. Individuals who do not have the ability to perceive that others approach innovating differently are unlikely to hear ideas and/or frame ideas in terms that others may understand. Therefore, failing to place versatile individuals in connecting positions is likely to hinder innovation in the organization.

Conclusion

The aim of my study was to seek an answer to the research question: *Why and how are some ideas more readily shared and developed into innovation outcomes than others?* By focusing on how individuals talked about sharing ideas and developing innovations, I found that ideas need to be presented in familiar language in order to be shared and developed into innovations.

When initiators present their ideas using language that is common and easily understood by receivers with the same orientation, receivers understand initiators' ideas and develop the ideas into innovation outcomes. When initiators frame their ideas using language that is known and familiar to receivers with different orientations, receivers also understand initiators' ideas and develop the ideas into innovation outcomes. Ideas that are not framed in language that receivers know and understand will not be understood and will be ignored.

Only 'special' individuals, called versatile individuals have the ability to frame their ideas using language that is known and familiar to receivers with different orientations. Therefore, versatile individuals not only initiate and frame their own ideas, but also frame others' ideas, using words that are known to receivers with different innovation orientations. In this way, versatile connect individuals with different orientations across the organization and facilitate the development of their and others' ideas into innovation outcomes.

Chapter 5.

Implications and Conclusions

In the preceding three chapters, I presented three language-based studies, each looking at a different theme related to the role of individuals in producing innovation outcomes. The papers sought answers to three different questions:

1. How do individuals innovate and why do they produce different types of innovation outcomes?
2. Why do individuals engage in innovating?
3. Why and how are some ideas more readily shared and developed into innovations than others?

In each of these chapters, I presented a theoretical model generated from the analysis of my data. In this final chapter, I summarize and consolidate these models into an overarching model.

Theoretical model of the role of individuals in producing different types of innovation outcomes

1. Two types of individuals produce two types of innovation outcomes

In **Chapter 2**, as a result of my analysis, I developed a theoretical model of the relationship between individuals' innovation orientations and the types of innovation outcomes that individuals produced. This model proposes that individuals approach innovating in one of two ways. I called this their 'innovation orientation' (see **Figure 6**).

Figure 6. ***Model of the Relationship between Individuals' Innovation Orientations and the Outcomes that Individuals Produce***
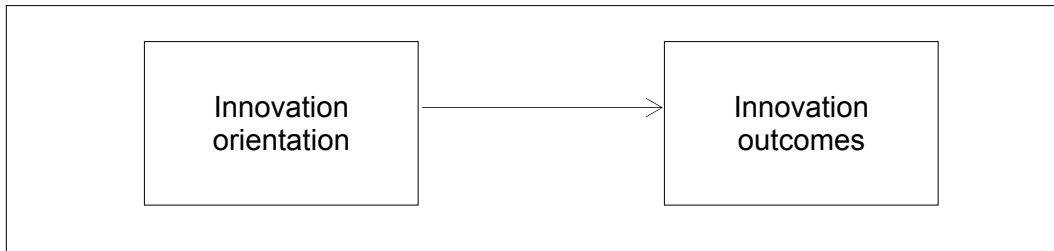
Individuals with a *should-be* innovation orientation (i.e. *should-be* individuals) approach innovating with the belief in a single 'right' way of doing thing; with an aim to achieve legitimacy; with proof that leaders had succeeded in doing the same things; in order to fix and prevent failures; by focusing on the specifications of the task, with the objective of working within the constraints of what already existed; by defining and quantifying change; and to achieve certain (i.e. known) outcomes. *Should-be* individuals also identified failures that they believe need to improved, external processes that should be adapted, or internal processes that need to be extrapolated through alignment with industry best practice, and participated in producing incremental innovation outcomes (Benner & Tushman, 2002).

Individuals with a *could-be* innovation orientation (i.e. *could-be* individuals) approach innovating with the belief in many ways of approaching a challenge; to make things useful and purposeful; to gain experience and knowledge and to learn from failure; in order to pursue opportunities; with a focus on an aspirational outcome; by using existing resources with the objective of working within the constraints of what already existed; by leveraging but going beyond what already existed; with the intention of adjusting plans based on emerging information; and in order to discover what was possible. *Could-be* individuals also identified opportunities to recombine resources, to link new ideas with what already exists, and to start from scratch and participated in producing radical innovation outcomes (Henderson & Clark, 1990).

2. Individuals' goals lead them to approach innovating in different ways

In **Chapter 3** I developed a theoretical model of the relationship between individuals' motivations and their approach to innovating (what I called their 'innovation

orientation'). This model proposes that individuals' approach to innovation is related to the goals they identify and their motivations for pursuing these goals (see **Figure 7**).

Figure 7. ***Model of the Relationship between Individuals Motivations and their Approach to Innovating***
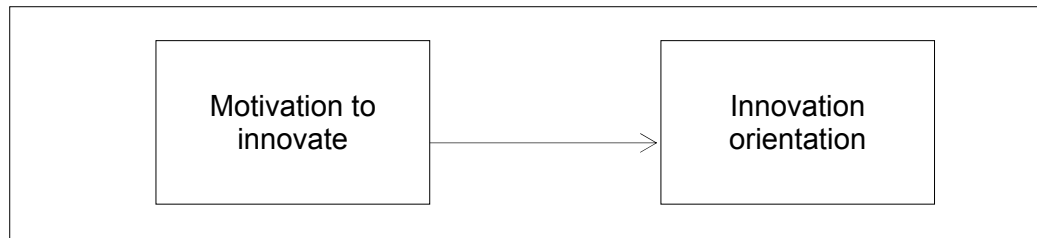
Individuals who are motivated by correct process, truth, and certainty – what I called *normative* motivations (Anderson & Moore, 1957) – are most likely to pursue linear change goals, and exhibit a *should-be* innovation orientation. Individuals who are motivated by purposeful opportunity, trial and error, uncertainty, and experience – what I called *descriptive* motivations (Anderson & Moore, 1957) – are most likely to pursue groundbreaking change and exhibit a *could-be* innovation orientation.

3. How individuals' ideas are shared determines if they become innovations

From my analysis in **Chapter 4**, I developed a theoretical model of the relationship between individuals' innovation orientations, the types of ideas they generated and the language they used to successfully share their ideas with others in order to get them developed into innovations. This model proposes that the ideas individuals generate are related to their innovation orientations; and that getting these ideas developed into innovation outcomes is related to the language individuals use to present their ideas to others (see **Figure 8**).

***Figure 8.   Model of the Relationship between the Ideas that Individuals
          Generate, the Language they Use to Share Ideas, and the Successful
          Development of their Ideas into Innovation Outcomes***
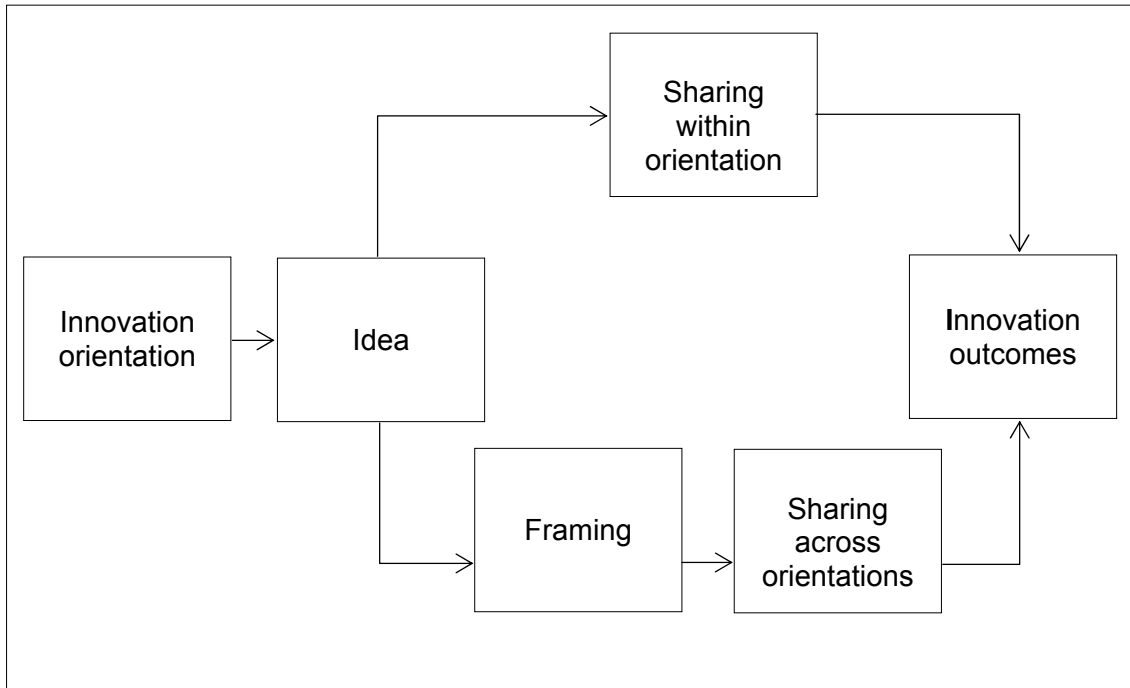
Should-be individuals are most likely to initiate linear ideas related to improving and enhancing existing processes, systems or products in the organization. *Could-be* individuals are most likely to initiate groundbreaking ideas related to creating or building new processes, systems, tools or products in the organization through recombination or by starting from scratch.

Ideas are most likely to be successfully shared with receivers using words that are known to receivers. When idea initiators and receivers have the same innovation orientation, successful sharing is highly likely because initiators present their ideas in common language that is easily understood by receivers. Ideas presented to receivers with different orientations needs to be framed in language that is known and familiar to receivers. Ideas that are framed in known language are more likely to be successfully shared with receivers who have different orientations to initiators. Ideas that are not framed in known and familiar language are most likely to be ignored or rejected.

Not all individuals are equally likely to be able to frame ideas in language known and familiar to receivers who have different orientations. Individuals who are able to frame I call, 'versatile.' Ideas that are successfully shared are most likely to be developed into innovation outcomes related to the initiators' orientations.

Conclusion

The theoretical model of the roles of individuals in producing different types of innovation outcomes generated from my analysis in **Chapters 2, 3 and 4**, suggests that the activities in which individuals engage in the organization are associated with their innovation orientations. Individuals generate ideas related to their innovation orientations to deal with the challenges they encounter as they go about their work. How individuals then share their ideas with those whose help they need to develop their ideas into innovations is also related to their innovation orientations. Ideas that are successfully shared in language that is familiar to receivers are likely to be understood, supported and developed into innovation outcomes. Finally, the types of innovation outcomes that are produced after being successfully shared are related to the innovation orientations of the idea initiators.

Contribution to theory

My grounded model of the roles that individuals play in the production of different types of innovation outcomes makes the following contributions:

First, scholars in the strategy literature talk about innovations as organizational or divisional outcomes, or the outcomes of designated innovation structures or roles (Ethiraj & Levinthal, 2009; Helfat & Peteraf, 2009; Siggelkow & Levinthal, 2003; Sutcliffe et al., 2000; Tushman et al., 2010; Tushman & O'Reilly, 1999). I propose that innovation outcomes might be further explained by looking more closely at the individuals in the innovation process. The idea that individuals produce innovation outcomes related to their innovation orientations may offer an explanation for the variance in innovation performance between organizations with similar roles and structures.

Second, the literature on motivation suggests that individuals move towards the same goals, only in different ways (Higgins, 1997). I propose that individuals perceive, consider and pursue a completely different set of goals associated with their innovation orientations. Furthermore, individuals with different innovation orientations notice, seek out and approach (and also fail to notice, ignore and avoid) different tasks in line with their innovation orientations. This suggests that the labels of "prevention" and "promotion" from the regulatory focus literature may better describe the goals that different types of individuals pursue; while both types of individuals pursue the goals aligned with their orientations with the objective of achieving positive outcomes.

Third, prior work has proposed that innovation happens when groups with different knowledge and language share ideas (Gibson, 2001; Hargadon & Fanelli, 2002; Hargadon & Bechky, 2006; Hinds & Bailey, 2003; Obstfeld, 2005). My model suggests that innovation also happens when individuals share ideas even – or especially – when these individuals have common knowledge and language. In the case of common knowledge and language, innovation happens because individuals generate new ideas related to their innovation orientations. The development of these ideas into innovations is related to them being successfully shared through common language.

This, in turn, suggests that a common language between sharing parties is necessary and sufficient for the sharing of novel ideas to occur and result in innovation. I argue that the acceptance of novel ideas by receivers is tied to the presentation of these ideas by initiators in common language; and less strongly related to factors like the relative power of the sharing parties, or the novelty of the idea being shared (cf. Carlile, 2004; Sewell, 1992).

Implications for practice

The main implication of my model for practice is that organizational leaders need to pay attention to the positions in which they place individuals in the organization. As mentioned previously, my analysis suggests that individuals do not produce innovation outcomes as a result of the organizational roles that they are assigned. Instead, they produce innovation outcomes in line with their innovation orientations. Therefore, I

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propose that leaders place individuals in positions where they will be supported in their production of the innovation outcomes that are aligned with their innovation orientations.

Furthermore, leaders ought to pay attention to the placement of versatile individuals in order to facilitate innovation throughout the organization. Leaders should assign versatile individuals to key organizational positions where they will be able to connect and share the ideas of idea initiators inside and outside the organization with idea receivers inside the organization.

Limitations and directions for future research

Despite the rigorous nature of my analysis, my study has several limitations that simultaneously provide the basis for future research.

First, it is important to note that this is a grounded study of individuals in innovative organizations in the high-technology industry on the north-west coast of North America. While I have attempted to generate a model that applies to a broader theoretical context (Glaser & Strauss, 1967), my findings and model may conceivably only explain the roles that individuals play in producing innovation outcomes in this context. Although I have gathered anecdotal evidence that suggests that my findings and model apply to other organizational contexts, I have no empirical evidence to support this. Before I can claim the model's application beyond my data and this context, the model must be further and rigorously tested and verified with new and significantly more data. The wider application of my model needs to be investigated, especially in large organizations where complex reporting relationships and organizational structures might take precedence over individuals' innovation orientations and their associated individual innovation practices.

Second, I did not explore whether organizational roles, strategy and structure moderated or mediate my findings. My research design did not explore which innovation orientations were best suited to specific roles in the organization. In other words, while my findings suggest that individuals with different orientations occupy the same types of roles, even in the same organization, my study did not explore whether individuals with certain innovation orientations were more or less suited for particular organizational

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roles. Nor did my study explore the implications of having individuals with particular orientations leading different divisions or departments on the production of organizational innovation outcomes. An exploration of the influence of having managers with different orientations at the head of various divisions would be extremely helpful in further exploring whether roles or functional assignments determine organizational innovation, or if innovation is more directly influenced by individuals' innovation orientations. In the future, I hope to extend my study by exploring the influence of roles or functional designations on the innovation outcomes produced by individuals with different innovation orientations.

Third, my interview sample was limited to those who were recommended to me as involved in innovating. I was therefore unable to discern whether all individuals in an organization approach their work in ways that align with the two innovation orientations I identified. If this were the case, it would suggest that all individuals have the capacity to innovate, and that leaders should consider the organizational implications of placing all individuals in roles that are misaligned with their innovation orientations. Although I surmise that all individuals may be categorized as having a *should-be* or *could-be* innovation orientation, my study did not investigate this. In the future, I plan to extend my study to include individuals who are not identified as innovative and to more thoroughly investigate the practical implications of all individuals having the capacity to innovate.

Fourth, mine was a cross-sectional study, so I can only allude to the implications of having individuals with certain orientations in particular roles over time. It goes without saying that a longitudinal analysis that traces the innovation outcomes produced in several organizations over time would strengthen and give new insight to my findings and model. A longitudinal study would help distinguish between the contribution of individuals and the contribution of roles or organizational functions in the production of innovation outcomes. A longitudinal study would also give insight into whether individuals can change innovation orientations over time, and into whether innovation orientation or versatility can be taught or learned. Such a study design might also shed light on the question of why start-ups seem to become less innovative over time.

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Appendices

Appendix A.

Theoretical Sample of Innovative Organizations

FutureSmart

FutureSmart is a Canadian software firm started by three friends and colleagues. The friends started planning their new venture in early 2001 based on a patent and prototype that one founder had developed in response to a local tragedy. The prototype was developed in anticipation of new technologies becoming mainstream as a result of recent regulatory changes. The founders brought a diverse set of experience and skills to their new company. Owen was American, with extensive leadership experience in the world's largest corporations. He had also led several start-ups to success. Glen was a Canadian marketer with experience leading his own and other breakthrough technology start-ups, as well as experience in leading projects and marketing teams in major international corporations. Timothy was a Canadian inventor and hardware engineer with experience overseeing strategy and operations in leading technology firms.

The three created FutureSmart to provide a technology platform and web-interface that enabled individual users to interact with third-party portable devices. Their plan was to sell the company's services through an established channel under better-known and trusted resellers' brands, leveraging these resellers' customer relationships, and their 24/7 support operations. However, FutureSmart hit the market too early. The technology the founders had envisaged did not arrive until 2007. In the interim, FutureSmart reconfigured its products based on input from its resellers. FutureSmart's offerings were reconceptualized to be used in various commercial applications. The market for commercial services was fairly well established. As a result, FutureSmart found itself in a highly competitive service environment, competing with some of the world's most recognized brands.

Nonetheless, FutureSmart quickly established a reputation for integrating and developing interfaces for multiple devices. Leading North American companies approached the venture to develop new consumer services. FutureSmart successfully and profitably developed and delivered these services in 2008 and 2009 amidst a global

economic meltdown. In late 2009, FutureSmart embarked on a project to launch a solution that resembled the one conceptualized in the original business plan developed almost a decade before.

Over its official eight year life-span, FutureSmart had grown from a three-person idea to a 28-person firm, sought after for its technology innovation. FutureSmart has been the recipient of several awards for being among the fastest growing companies in the Pacific North-West and among the 50 fastest growing companies in Canada.

ParadigmShift

ParadigmShift is an environmental chemical engineering firm. After almost a decade of research, the organization was officially created in 2008 with the development of its prototype and business plan. Wayne, one of ParadigmShift's co-founders, was a mechanical engineer with a Masters in aerodynamics. He had always liked building things, and had even started his own construction company after high school. However, he was passionate about engineering and research and had pursued a degree in mechanical engineering. During and after university, he spent his spare time conducting research in energy and thermodynamics. While working as a project manager in international energy giants, he continued his research, and eventually discovered a new way to model energy systems. Although his discovery was published in a scientific journal, he only realized the environmental potential of what he had found several years later.

The realization hit when he was doing his MBA. Together with Isaac, an MBA class-mate, Wayne put together the business plan for ParadigmShift. Their plan won first place at a local innovation competition, giving the two friends – now business partners and co-founders –money to launch their new company. Over the 18 months that followed, ParadigmShift built, tested, launched and marketed a new device that revolutionized the environmental energy field.

The original prototype developed in Wayne's living room was redesigned and rebuilt as several full-scale devices. The most recent prototype in the company's headquarters demonstrated the real-life application of its game-changing technology. Cash strapped and focused on protecting their IP, the founders and a handful of

carefully selected employees quickly built the company from an idea into a product that could be sold. ParadigmShift had a small number of private funders who demanded that it manage its finances responsibly and optimize processes to reduce costs.

ParadigmShift publicly revealed the true nature of its solution in late 2009. Immediately, Wayne and Isaac were inundated with offers of venture funding and requests for partnership agreements. Eager buyers lined up, and the company's focus shifted from proving its technology to adapting it to meet customer requirements. Word of ParadigmShift's technology spread. The company was covered in a leading international business journal. It was also invited to sit on an international panel of industry leaders in the field of environmental technology to represent Canada as the creators of a breakthrough clean technology.

GreatInsight

GreatInsight is a software development company and a subsidiary of TopCo, one of the world's largest transportation equipment-manufacturing firms. GreatInsight was started in 1996 by a group of five friends from an IT consulting firm that worked extensively with developing applications for transportation customers.

In late 2000, TopCo acquired GreatInsight for its breakthrough software products that revolutionized how transportation equipment customers operated their fleets. Almost ten years later, three of the original founders remained with the firm as senior executives. By 2009, the company had approximately 150 employees. The firm continued to develop software for the transportation industry. In addition, GreatInsight had begun to offer consulting services to firms outside the transportation industry that had large assets requiring regular maintenance and servicing. In 2009, seventy percent of the company was involved in enhancing software products for TopCo. About 10 percent of the company was engaged in consulting; and 20 percent was engaged in organizational administration and support.

Appendix B.

Regulatory Focus Survey

Instrument 1 (Lockwood et al., 2002)

Rate the following on a scale of 1 to 10:

(1 = Not at all true of me; 10 = Very true of me)

1. In general, I am focused on preventing negative events in my life
2. I am anxious that I will fall short of my responsibilities and obligations
3. I frequently imagine how I will achieve my hopes and aspirations
4. I often think about the person I am afraid I might become in the future
5. I often think about the person I would ideally like to be in the future
6. I typically focus on the success I hope to achieve in the future
7. I often worry that I will fail to accomplish my career goals
8. I often think about how I will achieve career success
9. I often imagine myself experiencing bad things that I fear might happen to me
10. I frequently think about how I can prevent failures in my life
11. I am more oriented toward preventing losses than I am toward achieving gains
12. My major goal in my position right now is to achieve my career ambitions
13. My major goal in my job right now is to avoid failure
14. I see myself as someone who is primarily striving to reach my "ideal self"—to fulfill my hopes, wishes, and aspirations
15. I see myself as someone who is primarily striving to become the self I "ought" to be—to fulfill my duties, responsibilities, and obligations
16. In general, I am focused on achieving positive outcomes in my life
17. I often imagine myself experiencing good things that I hope will happen to me
18. Overall, I am more oriented toward achieving success than preventing failure

Instrument 2 (Higgins et al., 2001)

This set of questions asks you about specific events in your life. Select the appropriate response on a scale of 1 to 5:

(1 = Never or very seldom ; 3 = Sometimes ; 5 = Very often)

1. Compared to most people, are you typically unable to get what you want out of life
2. Growing up, would you ever 'cross the line' by doing things that your parents would not tolerate
3. How often have you accomplished things that got you 'psyched' to work even harder
4. Did you get on your parents' nerves often when you were growing up
5. How often did you obey rules and regulations that were established by your parents
6. Growing up, did you ever act in ways that your parents thought were objectionable
7. Do you often do well at different things that you try
8. Not being careful enough has gotten me into trouble at times

Select the appropriate response on a scale of 1 to 5:

(1 = Never true ; 3 = Sometimes true ; 5 = Very often true)

9. When it comes to achieving things that are important to me, I find that I don't perform as well as I ideally would like to do

Select the appropriate response on a scale of 1 to 5 :

(1 = Certainly false ; 5 = Certainly true)

10. I feel like I have made progress toward being successful in my life
11. I have found very few hobbies or activities in my life that capture my interest or motivate me to put effort into them

Instrument 3 (Wallace et al., 2009)

On a scale of 1 to 5, rate how often you focus on these thoughts and activities when you are working:

(1 = Never ; 5 = Constantly)

1. Following rules and regulations at work
2. On the details of my work
3. Work activities that allow me to get ahead at work
4. My work responsibilities
5. How many job tasks I can complete
6. Completing work tasks correctly
7. Accomplishing a lot at work
8. Fulfilling my work obligations
9. Getting my work done no matter what
10. Doing my duty at work
11. Getting a lot of work finished in a short amount of time

Appendix C.

Correspondence Analysis

In Wordstat (Provalis, 2010), I ran a correspondence analysis for each organization, using the 100 most frequently used words that appeared in the transcripts of the interviewees from that organization (see Table 19).

Table 19.   Relative Positions of Word in Futuresmart Correspondence Analysis

Quadrant 1 words			Quadrant 2 words			Quadrant 3 words			Quadrant 4 words		
Base	0.542	1.215	Area	1.024	-1.462	Adopt	-1.369	-1.304	Address	-1.535	0.558
Decision	0.06	1.057	Benefit	0.157	-1.813	Architecture	-0.525	-1.208	Allow	-0.271	0.046
Design	0.483	0.751	Bug	0.406	-0.122	Book	-0.98	-1.674	Application	-0.541	0.788
Communicate	-0.038	1.692	Building	0.445	-1.292	Challenge	-0.365	-1.664	Approach	-1.057	0.382
Create	1.000	0.872	Code	0.927	-0.842	Expertise	-0.744	-1.801	Concern	-0.724	1.38
Experience	0.242	1.449	Component	1.235	-0.46	Fairly	-0.982	-0.751	Core	-0.556	1.038
Guess	1.293	1.925	Channel	2.79	-0.367	Fit	-0.576	-0.855	Cost	-0.168	0.203
Information	1.819	0.201	Drive	1.494	-0.219	Feedback	-1.077	-0.698	Data	-0.814	0.612
Learn	1.105	0.151	Environment	0.217	-1.854	Goal	-0.525	-1.208	Database	-1.167	0.527
Open	0.703	1.463	Essential	0.445	-1.292	Improve	-1.422	-1.323	Deliver	-0.776	0.409
Order	1.546	0.423	Focus	0.129	-1.358	Market	-0.263	-1.306	Develop	-0.411	0.275
Partner	1.793	0.964	Industry	0.658	-1.478	Quality	-1.369	-1.304	Developer	-1.332	0.856
Plan	0.862	1.196	Innovation	0.17	-1.443	Reason	-0.47	-1.592	Discussion	-0.132	0.199
Request	0.817	0.974	Integrate	2.304	-0.952	Risk	-0.958	-0.659	Exist	-0.327	0.343
Responsibility	0.444	1.879	Launch	0.268	-1.722	Solve	-0.342	-1.197	Feel	-1.042	0.453
Separate	0.407	0.57	Manager	0.421	-0.167	Step	-0.261	-0.938	Fix	-1.106	1.187
Service	2.03	1.36	Move	1.734	-0.645	Task	-1.226	-1.513	Framework	-1.733	1.304
Share	1.000	0.872	Project	1.342	-0.527	Technology	-0.263	-1.306	Hardware	-0.814	0.31
Similar	0.002	1.722	Real	1.414	-0.348	Tester	-1.386	-0.575	Identify	-0.776	0.409
Support	0.502	0.822	Report	1.806	-0.248				Implement	-1.057	0.382
View	0.957	0.743	Sell	0.658	-1.478				Introduce	-0.716	0.874
			Structure	1.61	-0.58				Knowledge	-0.039	1.024
			User	0.927	-0.842				Lead	-0.996	0.227
									Leave	-0.716	0.874
									Meeting	-0.945	1.409
									Organization	-0.238	0.134
									Past	-0.348	0.192
									Practice	-2.122	1.419
									Problem	-0.681	0.378
									Require	-0.487	0.11
									Requirement	-1.509	1.092
									Result	-0.119	0.377
									Running	-0.438	0.488
									Test	-1.607	0.852
									Tool	-0.421	0.132
									Training	-1.094	-0.89

The list excluded words used by more than 75% or fewer than 5% of the interviewees, since such words were unlikely to be characteristic of one or other group of individuals, if such groups existed in the organizations.

The correspondence analysis for FutureSmart produced the two-dimensional solution shown in **Figure 9** and the variance explained the two dimensions of the plot is provided in **Table 20**.

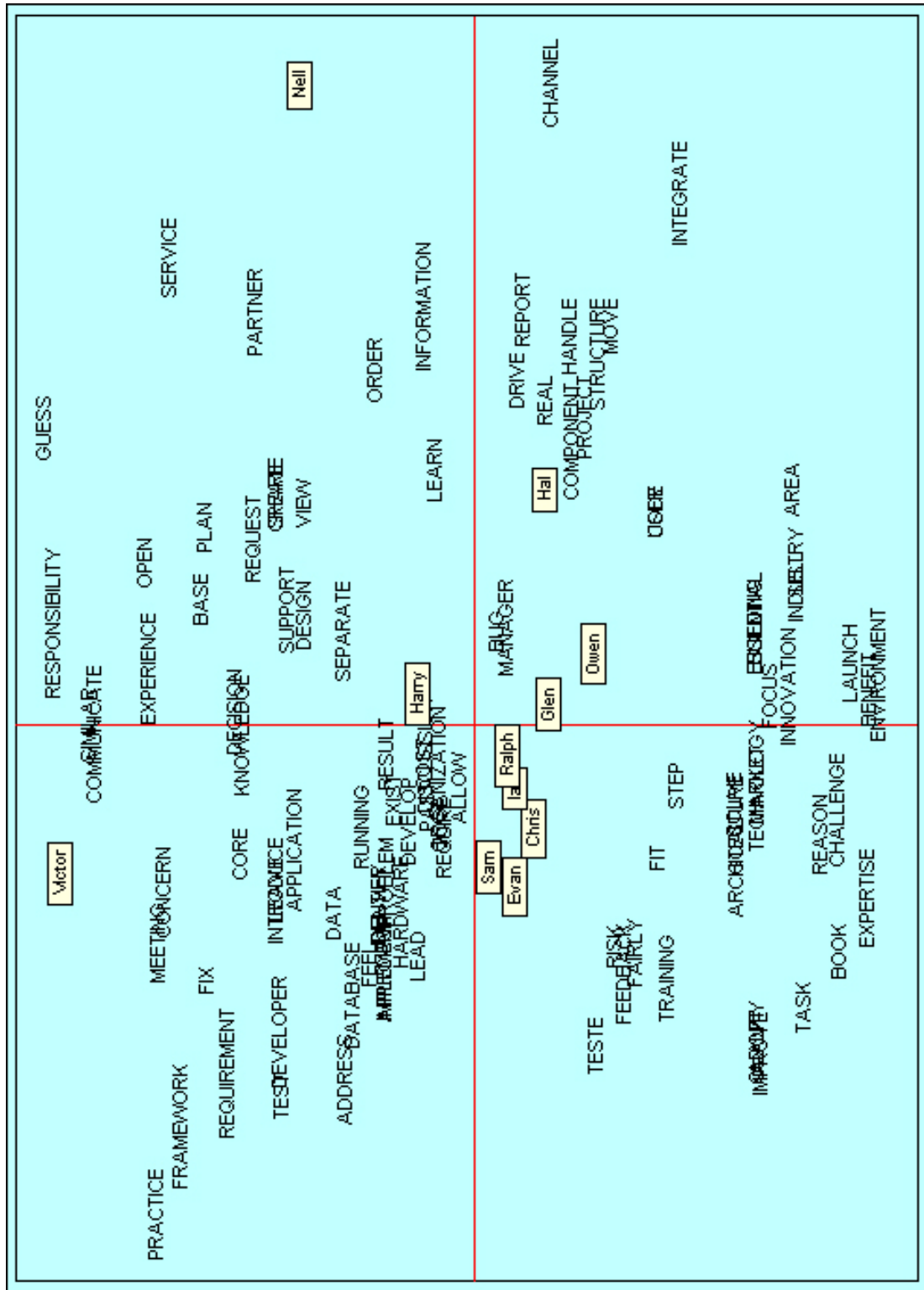**Figure 9.   Relative Positioning of Individuals Based on Word Usage**

Table 20. **Eigenvalue Report Showing Variance Explained by the Two Dimensional Solution**

Axis	Eigenvalues	Percentages	Cumul. Percent
1	0.109	18.552	18.552
2	0.100	17.054	35.606
3	0.069	11.718	47.324
Trace		0.278	
Sq. Rt of Trace		0.527	

The square root of the trace –interpreted as the correlation co-efficient between the words and individuals in our study (Bendixen, 1996) – is 0.527. This is greater than the threshold 0.2 (Bendixen, 1996), signifying a statistically significant dependency between individuals and the words they use.

Had the data been purely random, with no significant dependencies between words and the individuals who used them, the average axis would account for 100(11-1)=10% of the variance (Bendixen, 1996). However, since I found a relationship between the variables, and axes 1 and 2 account for 18.552% and 17.054% of the variance respectively (35.606% together), I consider the 2-dimensional solution to be an acceptable representation of the positioning of individuals relative to one another based on the words they used.