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Now That's Promising: A Social Influence Model of Innovation Evaluation

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NOW, THAT'S PROMISING!

A SOCIAL INFLUENCE MODEL OF INNOVATION EVALUATION

by

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ABSTRACT:

Identifying and investing in innovative initiatives is a fundamental challenge for individuals in the contemporary organization. And yet, while we know a good deal about the psychology of innovation evaluation, we know decidedly less about how such processes are influenced by the formal and informal structures within which individuals in this setting operate. To address these limitations, I first draw from work on the psychology of idea evaluation to identify and develop a heuristic of evaluation relevant to the evaluation of innovation—that of an initiative's promise. I then suggest that such promise evaluations will be simultaneously influenced by the formal and informal structures of the contemporary organization, the former consisting of this organization's division along project and subunit lines, and the latter by one's patterns of communication across a social network. Finally, I jointly model these structural antecedents of promise evaluations, outline a method of hypothesis testing, and then assess the model in the research and development arm of a Fortune 500 agribusiness organization. Results generally support the outlined theory.

To those who have cultivated in me a desire…

to pursue beauty with the blindness of the lover,

to seek truth with the absurdity of the theologian,

and to engage the creative with the language of the poet.

Table of Contents

List of Tables

List of Figures

CHAPTER I: INTRODUCTION

*Leaders sort through a mass of ideas to find the ones that fit into a coherent whole –
that support the story - which is a very difficult task. It's like an archaeological dig
where you don't know what you're looking for or whether you will even find anything.
The process is downright scary.*

Ed Catmull, CEO Pixar (2008)

Introduction

The efficient investment of financial and personal resources in innovative initiatives

is of fundamental importance to individuals in organizations. Put simply, it is crucial

for people to be able to accurately identify the promise of various initiatives in

development within their organization. Such evaluation entails identifying good

ideas, separating them from those of less value, and investing resources in a way to

develop the former towards further development and successful implementation

(Simonton, 2003b; Dailey & Mumford, 2006).

In the contemporary organization, the evaluation of innovation is important to an

increasing number of individuals, and no longer solely the domain of top

management. As always, top-management evaluation matters in that it guides

decision-making about resource allocation amongst the multitude of innovative

options currently in development (e.g. Burgelman, 1983), and is thus part of

1

building strategic efficiency in a dynamic market (Barrett, Musso & Padhi, 2009).

And yet, because the contemporary organization is characterized by an increasing

amount of decentralized control (Zenger & Hesterly, 1997; Tsai, 2002), thus

increasing "the autonomy of small subunits and reduc(ing)... the hierarchical

authority and behavioral monitoring that characterize internal governance" (p.

211), a larger number of individuals now have decision authority and resource

control. For example, at Google scientists control up to 20% of their time, thus

making their evaluations important to decisions about collaboration, choices on the

allocation of personal and financial resources, and the corresponding dissemination

of ideas across an organizational landscape.[1] In this world, innovation evaluation

matters to a greater number of people as more individuals have to decide whose

projects they should collaborate on, what ideas they should attempt to bring to

fruition, and how much of their time and other resources they should devote to

various possibilities.

Effectiveness in the task is also quite elusive. In organizations, managers are often

disappointed by their inability to evaluative innovation effectively. A recent Boston

Consulting Group report showing that less than half of managers are happy with

their returns on innovation spending, in large part because of poor resource

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[1] Even research which examines one *potential* outcome of evaluation, that of
knowledge transfer, rarely focuses on evaluation as the antecedent of knowledge
transfer, instead focusing on properties of the units, properties of the relationship,
or properties of the knowledge that facilitate this process (Argote, McEvily &
Reagans, 2003). However, because individuals have some degree of agency and
autonomy in their actions, transfer should be influenced by evaluation and
preferences, thus demonstrating a significant limitation of this literature as a whole.

allocation (2007). Writing on the difficulty of evaluating innovation in a complex system like health care for example, economist Glenn Melnick suggests that "the real challenge is… develop(ing) a system to do the research to identify those things that are going to be high value in the first place, and to screen out those things that are low value and not adopt them as quickly as we have in the past… I don't know any country that has done it very well so far, because new innovation is just so complex and hard to predict" (Ryssdal, 2009). The academic literature additionally bears our this complexity in showing how scientists are often unable to select for their best ideas (Simonton, 2003), and that the ineffectiveness of creative groups often stems from an underlying inability of these individuals to select for their best work (Rietzschel, Nijstad & Stroebe, 2006).

And yet, while the task is important to a large number of people and decidedly challenging, I would argue that the research to understand this process in the management and organizational literature is both limited in scope and decidedly fragmented. While we know a great deal on the psychology of innovation evaluation for example (e.g. Mumford, Mobley, Uhlman & Reiter-Palmon & Doares, 1991; Basadur, Runco & Vega, 2000; Mumford Lonergan & Scott, 2002), this work is limited in focusing on an overly rational conceptualization of this task, by proceeding too often in the laboratory setting, and thus failing to account for the task's ambiguity and the resulting social influences on such judgments (for critique, see Simonton, 2003a). And though we know quite a bit about how specific parts of an organizational structure will influence evaluation (Katz & Allen, 1982; Menon,

Thompson, & Choi, 2006; Tsai, 2002), this work is fragmented in failing to model these influences simultaneously, as is the case in focusing on formal structure without the informal structure, or vice versa (for prominent exception, see Ibarra & Andrews, 1993). In the following dissertation, I tackle these limitations by first addressing exactly what criteria individuals use in their evaluation of innovation, and then by arguing how this process of judgment will be shaped both by the formal and informal structural landscape of the contemporary organization.

Study Outline

I proceed in this task as follows. In the second chapter, I review empirical findings relevant to the evaluation of innovative initiatives, focusing initially on the psychology of idea evaluation. Much of this work attempts to identify the heuristic used by evaluators, and thus builds a relatively rational understanding of the process in identifying the correlates of effectiveness at the individual or process levels (e.g. Mumford, Mobley, Uhlman & Reiter-Palmon & Doares, 1991; Basadur, Runco & Vega, 2000; Mumford Lonergan & Scott, 2002). Building on this work, I first identify and develop an evaluative construct used by individuals in assessing the value of innovation—a judgment of an initiative's promise. Specifically, "promise" is a holistic evaluation of the future value to an investor (e.g. individual, group, organization) of an innovative initiative not yet developed. I argue that this heuristic will function psychologically based on an understanding of the initiative's match to

the goals and capabilities of the investor, and its demonstration of direct and generative return potential.

I then summarize the recent work on innovation evaluation in more naturalistic settings that shows how the process of innovation evaluation is characterized by a great deal of ambiguity. Specifically, work on scientific creativity shows a great deal of randomness in terms of which ideas are fruitful, and which are failures (Simonton, 2003a), a point corroborated in recent work on brainstorming on the difficulty of selecting for one's best ideas (Rietzschel, Nijstad & Stroebe, 2006). Thus, in the latter half of chapter two, I argue that this research highlights a significant limitation of the highly rational idea evaluation literature, and suggest that more care should be taken in modeling the ways evaluations are shaped by social influence in the absence of objective cues of value (Festinger, 1950; Pfeffer, Salancik, & Leblebici, 1976). I conclude this chapter by arguing that the specific form of influence in the contemporary organization can be understood by this structure's division along formal (project teams and subunit division) and informal lines (individuals connected by an information network across and within such formal divisions).

In the third chapter, I develop a comprehensive model of innovation evaluation, building around the heuristic of promise and modeling how the formal and informal structure of the organization should influence individual evaluation. Specifically, I hypothesize that an individual is more likely to see a project as promising when they

are directly involved in its development, and that this process will be amplified by that individual's status in the organization. Second, I argue that initiatives will be evaluated as more promising when they are within one's formal structural subunit, and this effect will be suppressed by the extent to which that individual interacts with other individuals spread across other subunits of the organization. Finally, I argue that an individual's evaluations will be influenced by the evaluations of their networked peers by way of social influence, and suggest that this influence will be strong both with cohesively tied alters, and those alters who have relevant information about the initiative in question.

In the fourth chapter, I identify a site for model testing as the research and development division of a Fortune 500 global agribusiness organization. I then describe the data, outline relevant measures, and describe an analytical approach for testing the theory. Next, I test the model and proposed hypotheses, and show how the results generally support the outlined theory. In the last chapter, I conclude by summarizing the relevance of the findings to the current theoretical and empirical work, identify limitations of the study, and summarize several relevant implications for the practice of management and design of organizations.

CHAPTER II: LITERATURE REVIEW AND CONSTRUCT DEFINITION

We must not be misled by the procedures of experimental thought: in life, in the world, we are never given two known realities to choose between, but only one result that we choose without knowing what it is.

Wendell Berry (1983)

Introduction

Much has been said about innovation evaluation and its correlates in decision-making, knowledge sharing, and diffusion of innovation. This topic has been addressed either directly or indirectly in social and cognitive psychology (psychology of idea evaluation), sociology (innovation diffusion) and economics (behavioral decision biases and subjective utility models of innovation), among others. In the following review, I focus on the literatures that I believe best serve to develop a comprehensive psychological model of innovation evaluation in the contemporary organization.

Specifically, by starting with the assumption that evaluation involves distinct psychological processes that shape choice, rather than one characterized by blind adoption[2], I first review the work on idea evaluation in psychology that explicitly models the psychological process of judgment (e.g. Dailey & Mumford, 2006; Runco, 2003; Lonergan, Scott & Mumford, 2004; Mumford, Lonergan & Scott, 2002). This

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[2] Though sociological models (e.g. Wejnert, 2002) often do not explicitly state this assumption, by modeling and measuring selection rather than evaluation, this should be considered an implicit assumption in practice for this type of work.

research suggests that the evaluation of innovation is heuristic-based, where the relevant heuristic is a product of the context of evaluation. I build from this argument to develop a heuristic used in the evaluation of innovative initiatives—that of an initiative's promise.

In the second half of the chapter, I argue that the psychology of idea evaluation is limited in assuming and arguing for an overly rational process of evaluation. Specifically, the empirical work in this field often proxies judgment as an assessment of the objective novelty and usefulness of an idea, and examines it in a context devoid of the structural and social complexity that exist in the contemporary organization. And yet, if the link between evaluation and outcome is significantly more random or ambiguous (Simonton, 1997; 1999; 2003a), the social environment in which the evaluations take place should influence the psychological process of evaluation, and should be modeled as such (Festinger, 1950; Pfeffer, Salancik, & Leblebici, 1976). Thus, in preparation for the development of the formal model in the third chapter, I conclude this chapter with a conceptualization of the contemporary organization as divided along formal and informal structural lines, and then briefly identify the literatures that speak to the direction of such effects.

The place of evaluation in the innovation process

Though researchers of creativity have historically devoted less attention to the evaluation of ideas relative to their generation (Dailey & Mumford, 2006; Runco,

2003; Lonergan, Scott & Mumford, 2004; Mumford, Lonergan & Scott, 2002),

rectifying this imbalance of late has been a growth of theoretical and empirical

attention directed towards the evaluation phenomenon.[3] In this review, I focus

specifically on the evaluation of innovation rather than evaluation more generally as

I believe the target of evaluation makes the process of judgment distinct from other

forms of evaluation. Within this larger body of work on evaluation more generally,

there are models in marketing that look at the evaluation of specific product

features (Bettman, Johnson & Payne, 1991; Hauser & Urban, 1979; Pincus & Waters,

1977), studies in the organizational context that focus on the evaluation of

individuals and their work (DiTomaso, Post, Smith, Farris, & Cordero, 2007), and

studies on responses to the implementation of new organizational policies (Rice &

Aydin, 1991), to name a few. While the evaluation of innovation is related to the

above models in that it is a special case of evaluation more generally, there are

aspects of innovation that make the process of evaluation qualitatively different.

Specifically, the evaluation of innovation is distinct from other forms of evaluation in

its forward-looking nature (Gavetti & Levinthal, 2000), the ambiguity of its future

value, and the corresponding heuristics used to project value. Given these

differences, in the following review I focus specifically on the evaluation of creativity

and innovation.

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[3] In this project, though I deal with the phenomena of innovative initiative
evaluation, I sometimes refer to it as idea evaluation, innovation evaluation or
initiative evaluation in an effort to maintain consistency with the terminology used
in the relevant literature.

Within the idea evaluation work, a number of theorists have worked to model the place of evaluation within a larger model of creative and innovative contributions (e.g. Mumford, Mobley, Uhlman, Reiter-Palmon & Doares, 1991; Basadur, Runco & Vega 2000; Mumford Lonergan & Scott, 2002). Campbell's seminal 1960 Psychological Review piece sets a foundation for this work by identifying creativity as an evolutionary process of blind-variation and selective-retention. Following this model, Simonton (1988), Perkins (1988), and Martindale (1990) model creativity along variation, selection and retention dimensions. Others use a similar logic while identifying the phenomena with different terminology: that of divergent and convergent thinking (Johnson-Laird, 1988; Cropley, 2006), the development of a response and response validation (Amabile, 1996), or idea generation and evaluation (Runco & Chand, 1995).

In defining these constructs and their inter-relationship, Basadur, Runco and Vega (2000) propose the following model: "*Ideation*, or active divergence, is the generation of options without evaluation (deferring judgment). *Evaluation*, or active convergence, is the application of judgment to the generated options to select the most significant options" (p. 80). Evaluation may operate for the judgment of one's own ideas (intra-individually), or the ideas of others (inter-individually). Evaluation concludes with acceptance, revision, or discarding of the idea or initiative in question (Mumford, Lonergan, & Scott, 2002).

If the evaluation of initiatives involves the application of psychological standards to an idea or initiative in question, what standards do individuals use in evaluation, and how is this process operationalized in the literature? In the idea evaluation work, researchers conceive of this judgment as primarily taking place using three conceptually different heuristics: specifically, (1) the identification of idea characteristics, (2) the input-output analysis of initiative development, or (3) the application of holistic evaluative constructs. Depending on the approach utilized, the measurement of accuracy or effectiveness will also vary (e.g. the standard used for comparison). These three approaches and their corresponding standards of comparisons for accuracy are outlined in Figure 1.

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Insert Figure 1 about here

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The first approach conceives of evaluation as the rational identification of characteristics of an idea. In this approach, evaluation effectiveness is whether individuals are capable of accurately identifying 'objective' characteristics of ideas. Operationally, Runco and colleagues popularized one such approach with their focus on individual evaluations of an idea's novelty and popularity (Basadur, Runco & Vega, 2000; Runco, 1991; Runco, 1993; Runco, 1994; Runco & Smith, 1992; Runco & Chand, 1994; Runco & Vega, 1990). To gain a measure of accuracy in the laboratory

setting, evaluations are compared against 'objective' uniqueness and popularity

measures, often based on a count of the number of people who suggested this

solution (reverse coded as novelty), and the ratings of outside observers

(usefulness), respectively. While maintaining a characteristics approach, Blair and

Mumford (2007) expand the focus from these two criterion by suggesting that,

"people (not only) consider outcome attributes, (but) also consider more complex

characteristics of an idea such as the fit of the idea to social context, peoples' ability

to understand the idea, and the requirements for idea implementation" (p. 200).

These might include such idiosyncratic features of an idea or team as

entrepreneurial passion (Chen, Yao & Kotha, 2009), taste and texture of a culinary

dish (Horng & Lin, 2009), or perceived complexity of a musical score (Eisenberg &

Thompson, 2003).

The second approach is a focus on the projected inputs for developing an idea, and

the projected outputs that would come from its development. Mumford, Lonergan,

and Scott (2002) outline evaluation as a forecasting process followed by a

comparison of these predictions to the relevant standards of judgment. In this

approach, accuracy is measured by a comparison of these forecasted costs and

benefits to the actual requirements for development, and/or the actual downstream

outcomes. For example, Dailey and Mumford (2006) outline ten resource

requirements and ten outcomes of innovation from the innovation literature,

including such factors as time required for development (input), amount of effort

required to coordinate the task (input), and the amount of people who will resist the

ideas implementation (output) or the likelihood of an ideas acceptance (output).

Accuracy is then measured in the lab by comparing individual projections of such

inputs and outputs on historical case studies with their actual inputs and outputs

from development (Dailey & Mumford, 2006).

The third heuristic of evaluation conceptualizes individuals as using more holistic

evaluative criteria. Such constructs can be conceptualized as quantitative or

qualitative in nature. Quantitative heuristics are often used in the economics

literature. For example, expected utility theory and subjective utility theory

conceptualizes individuals as evaluating innovative routes based on certain financial

return possibilities at specific probabilities of occurrence (e.g. Starmer 2000). Work

on qualitative judgment standards build on the cognitive science studies which find

that individuals use categorical and symbolic categories in analyzing situations of

high uncertainty (Kuipers, Moskowitz, & Kassinger, 1988). This psychological

approach views evaluation as taking place using qualitative constructs deemed

appropriate by the social setting, such as being more or less 'good.' When accuracy

is measured in these approaches, it is by comparison of such evaluations to

downstream outcomes such as financial return.

The Contextual Origins of the Evaluative Heuristic

In most idea evaluation models, the process is considered social in that the heuristic

of judgment is conceived as emerging from a specific context of evaluation. In his

systems model of creativity, Csikszentmihalyi (1988; 1996) suggests that selection depends on an understanding of appropriateness, one part of which is the domain, or set of symbolic rules that define the boundaries of permissible ideas. In a theory piece on the matter, Bink and Marsh (2000) suggest that past conceptions from the field are encoded into one's memory, thereby helping individuals sort the novel from the already developed. Christiaans (2002) finds that individuals develop conceptual representations of an internal prototype that are used for comparison in the evaluation process. Sawyer (2003) suggests that, "social process knowledge was internalized to such an extent that it took effect at the preconscious level of evaluation. This is part of what it means to be an expert in a discipline: to have this almost intuitive ability to judge what is an interesting problem, or what is a potentially valuable solution" (p. 321).

The role of the context in shaping internalized heuristics is demonstrated by the variance of evaluative norms across industries. In an analysis of venture capital decision-making, Shepherd (1999) finds that VC's assessments of survival probability were best predicted by characteristics of the entrepreneurial team (e.g. industry expertise) and characteristics of the venture itself (e.g. lead time). In their influential work on Hollywood pitch meetings, Elsbach and Kramer (2003) find that evaluators focus on characteristics of the creative team and the relational dynamics between the pitcher and receiver. Increasingly, there has been interest in perceived passion of the entrepreneurial team as a factor predicting likely investment (Chen, Yao & Kotha, 2009). In an extension into two more aesthetic domains, Horng and Lin

(2009) find empirical support that judgments of creative dishes in the culinary industry rely on an assessment of professional technique, aroma, taste, and texture, color, modeling and arrangement, garnish, dishware, handling of ingredients, and overall assessment. Likewise, Eisenberg and Thompson (2003) find that evaluations of improvised music are based on perceived complexity, creativity, and technical prowess.

Evaluative Construct- Initiative Promise

Given all these ways to understand the evaluation process, what is the evaluative heuristic most used by individuals in their assessment of innovative initiatives in the contemporary organization? Of the three approaches for conceptualizing idea evaluation, I avoid the characteristics and input-output approaches respectively for several reasons. First, if one goal of studying evaluation is in part an attempt to link evaluation to behaviors such as resource allocation, project collaboration, or innovation diffusion, the use of the characteristics approach requires understanding both the right set of characteristics *and* their relative weightings in the evaluator's mind. This task is theoretically and methodologically difficult given that such factors shift over time in the mind of the individual (Simonton, 2003b), and may not be easily amenable to introspection (Wilson & Bar-Anan, 2008; Wilson, 2002). As against an input-output approach, I follow Blair and Mumford (2007) in their suggestion that "people (not only) consider outcome attributes, (but) also consider more complex characteristic of an idea such as the fit of the idea to social context,

15

peoples' ability to understand the idea, and the requirements for idea implementation" (p. 200). Taken together, this suggests that the evaluation of innovation best fits the qualitative holistic approach model of judgment (Kuipers, Moskowitz, & Kassinger, 1988).

One qualitative construct applicable to the evaluation of innovation in an organizational context is whether an initiative is seen as showing *promise*. I define the evaluation of innovation's promise as **a holistic evaluation of the future value to an investor (e.g. individual, group, organization) of an innovative initiative not yet developed.** This judgment is a function of an initiative's match to the goals and capabilities of the investor, and a demonstration of both direct and generative return potential. The higher a project is along these dimensions, the more an individual will see it as promising. Though initiatives strong on all dimensions are likely to be seen as especially promising, and I would argue that these facets should covary, being high along a few but not all of the dimensions should still make an initiative appear valuable.

Bereiter and Scardamalia (1993) present an early attempt to explicate the promise construct in suggesting that creative experts are those who are able to identify the 'promisingness' of an idea, or "whether it will lead anywhere" (1993: 136). The authors outline three dimensions of promisingness, mirroring the above four dimensions while not distinguishing between direct and generative outcomes. Bereiter and Scardamalia suggest that these dimensions function as a "collective of

16

indicators that has begun to coalesce into a pattern, so that when one indicator is activated the person begins to watch for the others" (p. 139). Consequently, I suggest that the concept of promise functions heuristically as an evaluation mental model, in that it is "a mental template that individuals impose on an information environment to give it form and meaning" (Walsh, 1995: 281).

By operating at the level of the evaluator's psychology, initiative promise is conceptually distinct from the explicit criteria organizations may use to evaluate innovative initiatives. For example, Gore uses a framework of REAL/WORTH/WIN in product evaluation (Hutchinson, 2000). Under this model, a product is valued in terms of the real market of the product and the feasibility of the product itself (REAL), whether it fits the core competencies of the company and whether it will be competitive in the larger market (WORTH), and finally whether it will make money in addition to other outlined benefits (WIN). Assuming that psychological heuristics might mirror explicit evaluative constructs[4], Gore's criterion provides some anecdotal justification for the promise construct in terms of the former's use of comparison to characteristics of the organization (mirroring goals and capabilities of 'promise') and use of both profitability and other metrics of returns (mirroring direct and generative outcome potential of 'promise').

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[4] The existence of explicit organizational criterion however does not invalidate the study of more implicit psychological evaluative criterion of individuals invalid, even though it is fair to expect some reciprocal influence between these constructs. In terms of reciprocal influence, individuals at Gore might think in terms of promise because its similar to the explicit criterion of the organization, or the explicit criterion might have been formalized from an already existing understanding of what connotes a promising initiative.

Each of the four dimensions of promise is relevant to innovation evaluation for different reasons. Capability is an integral dimension to evaluation because initiative development requires involvement and expertise on the part of the evaluator. For example, in the case of a venture capitalist making an investment in an entrepreneur, the investor must bring capabilities specific to the needs of that entrepreneurial venture for it to be developed effectively (e.g. expertise in and knowledge about bio-medical devices for a bio-medical venture). In organizations, the importance of capability fit shows itself empirically in the increased difficulty of developing disruptive innovations out of line with current capabilities. Specifically, organizations are most likely to successfully develop incrementally innovative products for their existing customers that are in line with their current capabilities (Christensen & Bower, 1996; Christensen, 1997).

Likewise, not all products will be evaluated as equally promising given goal heterogeneity across organization, or a larger market. While goals have been used as a construct in the innovation research less frequently, recent theoretical work on brainstorming suggests that goals are an apt targeting mechanism to increase the efficiency of the creative brainstorming and evaluation process (Litchfield, 2008), . They act as a necessary 'constraint' on the creative and innovative processes (Stokes, 2006). This is especially needed in organizations because creativity is bound by the practical constraints and goals of the focal organization (Hirst, Van Knippenberg & Zhou, 2009). Strategic decision-making around innovation can be

18

seen as a function of fitting a strategic agenda (Dutton, 1997), or as a limiting set of goals or issues on which they can focus at any period in time. The goals of an individual or organization serve to direct limited attention towards the most promising opportunities (Hilgarter & Bosk, 1988).

In outcome consideration, promise evaluations are a function of both direct and generative return. Direct outcomes are those that flow directly from the focal innovation, and are often measured along metrics of profitability tied to an initiative. This dimension is most in line with an economic model of evaluation, where projects are evaluated by their net present value (e.g. Kalnins, 2007). A 2007 Boston Consulting Group report on innovation identifies such direct returns as "perhaps, the single most important metric" of post-investment analysis (Boston Consulting Group, 2007: 7).

The generative[5] dimension of promise suggests that these initiatives must also demonstrate an ability to facilitate a stream of value. Anecdotally supporting the importance of generativity in promise evaluations within research and development organizations is the existence of basic research. Basic research often provides less in the way of direct return, but is used as a generative mechanism of future innovation. Innovation will also vary in generativity outside the distinction between basic and applied research. Some fully developed projects may be more generative than

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[5] This is different then the concept of generative creativity as outlined by Fleming, Mingo and Chen (2007). Their use of generative refers to how creativity is generated through diverse social interaction. My use of generativity refers to the ability of a specific idea or initiative to generate future ideas or initiatives.

others, as is the case with a project that initiates a distinct innovation stream (Smith & Tushman, 2005) versus a project whose only returns come directly out of that initiative. In the academic world for example, a generative project is one that produces a strong stream of research. In contrast, a less generative piece may demonstrate direct return in publication, hit rate, or a research award, while not providing additional routes forward in the literature.

A Rational Focus on Evaluation Effectiveness

Beyond identifying the heuristic of evaluation, the majority of the work in the psychology of idea evaluation focuses on characteristics of the individual or process that influence effectiveness or accuracy in evaluation. A summary of these approaches, along with research on context shaping the relevant evaluative heuristic, can be found in Table 1. A representative set of papers is found in Table 2.

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Insert Table 1 and Table 2 about here

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From the perspective of the evaluator, there is a great deal of work on individual characteristics that lead to effectiveness in the evaluation process. For example, researchers find evaluation effectiveness related to divergent thinking (Basadur, Runco & Vega, 2000; Runco, 1991; Runco, 1993; Runco, 1994; Runco & Smith, 1992;

Runco & Chand, 1994; Runco & Vega, 1990), openness to experience (Silvia, 2008), and specific analytical skill sets (Groborz & Necka, 2003; Sternberg & Lubart, 1991, 1992, 1996, 2003). Other work has looked at the systematic biases that will emerge in the evaluation process (for review, see Mumford, Blair, Dailey, Leritz & Osburn, 2006). For example, Dailey and Mumford (2006) find that individuals underestimate resource requirements and overestimate outcomes when more familiar with the issue. Other work at the individual level suggests it is training that makes the difference for evaluation. For example, Kaufman and colleagues demonstrate that time in the field will make individuals more effective at evaluation, demonstrated by the fact that experts are more likely to agree in their assessment than non-experts (Kaufman, Baer, Cole and Sexton, 2008). One interesting case study shows both skill and training effects. Specifically, in analyzing Beethoven's discernment of his own ideas (coded by seeing his compositions as more positive or negative), and their relationship to downstream critical response, Kozbelt (2007) finds that Beethoven's statements about his own work were predictive of their critical reception (skill), and that this critical discernment ability improved over time (training).

The other prominent stream in this research examines evaluation from a process standpoint. For example, Basadur, Runco and Vega (2000) demonstrate that one's preference for deferring judgment is positively related to the skill of idea evaluation, where skill is the ability to correctly identify one's ideas as original or unoriginal. In a field study, Hallen and Eisenhardt (2008) argue for the benefits of judgment delay in that it allows the accumulation of information, and show it increases the

likelihood of relationship formation between partner and a high-value venture.

Others suggest that time pressures will change the type of innovation preferred in evaluation, with more radical innovation preferred given high time pressures, and more incremental innovation consistent with short-term norms preferred given low time pressures (Blair & Mumford, 2007). On a more sober note, Mumford and colleagues argue that the extended delay of search may lead to an overinvestment of scarce cognitive resources in information gathering and critical analysis (Mumford, Blair, Dailey, Leritz & Osburn, 2006), processes not empirically related to improved evaluation.

Additional contributions on the process side look at the context of evaluation and their influence on judgment results. In a theory piece, Mumford, Lonergan and Scott (2002) argue that the framing of the task of evaluation will shape the evaluation and resulting revision of that idea in development. Early empirical work supports this proposition. Specifically, Lonergan, Scott and Mumford (2004) find that framing the evaluation of ideas along innovation lines – priming the importance of considering the improvement to the business lines – versus operational lines – priming the costs of implementing such processes – influences evaluation of the idea and its corresponding revision and further development; specifically, the most effective idea development happens when the evaluator applies innovative standards to less original ideas, and operational standards to more original ideas.

Critique and Movement Beyond Current Idea Evaluation Models

Much of the idea evaluation literature reviewed above can aptly be conceptualized as operating under a rationalistic expertise approach. Specifically, this work often examines how individuals identify objective characteristics of the idea, such as their novelty or popularity (the first heuristic of evaluation), and proceeds in the laboratory in an attempt to isolate characteristics of the individual or process and their relationship to effectiveness. And yet, I would suggest that the starting assumption that effective evaluation is simply the process of identifying *objective* characteristics of ideas and initiatives is called into question by work examining the longitudinal relationship between idea selection and downstream value. In addition, several important theoretical and methodological critiques emerge from within the idea evaluation literature itself, all pointing to the necessity of modifying the focus of study of the current psychological models.

First, work on the development and evaluation of scientific research suggests that there is a fixed degree of randomness in the production and selection of creative ideas. In his stochastic model of scientific creativity, Simonton (1995) shows that people are not very good at selecting for their best ideas, and that this ability does not necessarily improve over time. Specifically, he (2003a) finds that creative productivity in academic scientific settings—producing high quantity contributions deemed creative within this field—is most associated with producing a high number of works more generally, creative or not (1997). In other words, "those scientists

who produce the most ideas deemed worthy of attention by others in their fields would also tend to generate the most ideas that are ignored or even criticized by their colleagues" (2003a: 478). And while some people may appear more effective than others at the task, Simonton shows statistically that departures from this association are in line with probabilistic expectations, and that the time pattern of the output is random and Poisson distributed, a distribution that emerges when the probability of a specific event—that of an idea being considered creative and high value to the literature—is low and the number of trials is high (1997; 1999). Recent work on brainstorming corroborates this effect, showing that groups as a whole are quite ineffective at selecting for their best ideas (Rietzschel, Nijstad & Stroebe, 2006). Summarizing his work, Simonton concludes that "to predict the likely long-term impact of a given scientific inquiry would **demand that the evaluator be some kind of prophet who can anticipate the future direction of the field**" (2003a: 480, emphasis mine).

Foundational to the ambiguity of organizational innovation is the fact that ideas must enter a marketplace where success depends both on the unknown actions of other organizations, and the uncertain demand of potential customers. In arguing for outcome ambiguity of historically embedded events similar to such marketplaces, Karl Popper argues against the ease of predictability given that events in this domain are not well isolated and stationary like phenomena in the natural sciences (Popper, 1963). Theorists in the decision comprehensiveness literature supplement the following point in suggesting that the rapid and discontinuous

nature of environmental change limits the ability of individual decision makers to identify the link between strategic choices and strategic outcomes (Eisenhardt & Bourgeois, 1988).

Other theoretical critiques of these rationalistic models are found internal to the idea evaluation research itself. Specifically, in appraising the theoretical meaning of evaluation accuracy, Silvia (2008) writes:

> I suspect that most creativity researchers, in their heart of hearts (or brain of brains), would agree that there is no gold standard for creativity. Creative products probably do not have a true, innate level of creativeness—their creative worth is ultimately determined by complex sociocultural and historical processes (Sawyer, 2006; Simonton, 1998). Without a gold-standard criterion, it is impossible to assess whether someone's judgments match the criterion scores (p. 141).

In their investment theory of creativity, Sternberg and Lubart (2003) also argue for the ambiguity around innovation or creativity's true objective value. Specifically, the "selling" dimension of their investment model is a reflection of creativity as part social construction. They write:

> Even in the rarified fields of science such as physics, it is not enough just to have ideas— physicists have to know how to convince others of their worth. We have talked to people in many fields, and without exception they agree that

there are some in their fields whose ideas have won much more acceptance
than they deserve because of the quality of the sales job, whereas there are
others whose ideas have won less acceptance than they deserve because they
are not well packaged (Sternberg & Lubart, 2003: 184).

Taken together, these findings raise the question of whether the underlying
assumption of the idea evaluation work effectively mirrors the dynamics of
innovation in more naturalistic settings. In many of these studies, often taking place
in the laboratory, subjects "are (often) presented with problems that have known
solutions. (And yet), genuine creative behavior seldom works this way, in science or
otherwise. Instead, creativity is applied to open-ended problems in which the
answer is unknown." (Simonton, 2003a: 486). Furthermore, while many idea
evaluation studies examine whether individuals are able to accurately identify
specific features of an initiative thought to be related to creativity success – such as
novelty and popularity—determining the best ideas in a complex market is never
only about understanding whether an idea is novel or not, as these features alone
may not correspond to innovative marketplace success, or not necessarily in their
assumed weightings (Simonton, 2003b).

So, what is the best way to synthesize the difference between those who find the
individual and/or process correlates of evaluation effectiveness, and those like
Simonton (2003a) who show a fixed degree of randomness in the relationship
between innovation selection and downstream success? Realizing the apparent

26

discrepancies between the rationalistic framing and his work on the stochastic nature of creativity, Simonton attempts to integrate the two approaches in suggesting, "the same stochastic behavior would appear at the macro level even if the underlying processes at the micro level were entirely logical in structure" (2003b: 489). He concludes that these approaches can be seen as different levels of abstraction, where viewing one without the other is akin to not seeing the forest for the trees.

Pushing Simonton's analysis further, I propose that an integration of these perspectives requires modeling how the elucidated psychological processes take shape in an environment that is, to some degree, fundamentally ambiguous. Following Festinger's foundational work on social comparison (1950), I argue this means taking seriously the statement that, "the less 'physical reality' there is to validate the opinion or belief, the greater will be the importance of the social referent, the group, and the greater will be the forces to communicate" (p. 173; c.f, Pfeffer, Salancik, & Leblebici, 1976).

What I suggest for a middle ground is as follows. Innovation is ambiguous with regards to future value, thus involving a fixed degree of randomness. This is different from uncertainty as modeled in much of economics, where "decision makers are said to know the probabilities associated with a set of possible outcomes, even though they do not know exactly which outcome will occur" (Forbes, 2007: 367). As a working assumption, I argue that ambiguity as a fixed

degree of randomness means that individuals will approach the task heuristically rather than probabilistically or characteristically– with what I suggest is the heuristic of "promise." Furthermore, these evaluations of promise will be open to various kinds of social influence as a result of the lack of clear objective determinants of value. As such, understanding evaluation given its inherent ambiguity requires illuminating how these psychological processes of evaluations, as helpfully identified by the creativity literature, are shaped by the salient influences of the contemporary organizational context.

The Structure of the Contemporary Organization

Given (1) the ambiguity of innovation, and (2) the argument that ambiguous evaluation will be influenced by the relevant features of the social environment, the question remains what is context of social influence in the contemporary organization. Summarizing the changing nature of the contemporary organization, Zenger and Hesterly (1997) argue that the majority of firms have been in the process of reengineering, reorganizing and restructuring their operations towards greater subdivision autonomy and the use of team based structures. At the most extreme, "small subunits are structurally configured to produce and exchange definable outputs, are aggressively measured as separate units, and are rewarded directly for subunit performance" (p. 211). Furthermore, such decoupling is often paired with "cross-functional teams that cluster the broad set of capability required to produce an output or perform a process within a subunit (Hammer & Champy,

1993)" (Zenger & Hesterly, 1997: 211). This latter point coincides with the general movement towards team-based organization (Senge, 1990; Edmondson, 2002).

In addition to the use of teams and subunit divisions, Hansen's (1999) work on the modern research and development context points out that another prominent feature of the contemporary organization is the set of informal ties across individuals that facilitate the sharing of information.[6] Specifically, he suggests that, "a product development team situated in an operating unit can use established inter-unit relations which exist prior to the start of the project-to search for and transfer to the project various types of knowledge residing in other operating units" (Hansen, 1999: 83). And though the formal organization is likely to shape the informal organization (Scott, 1981), the two are by no means synonymous. As argued long ago by Roethlisberger and Dickson (1939):

> Many of the actually existing patterns of human interactions have no representation in the formal organization at all, and these are inadequately represented by the formal organization…Too often it is assumed that the organization of a company corresponds to a blueprint or organization chart. Actually, it never does. (p. 559).

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[6] While Hanson's work is specific to product development, the existence of informal ties and informal networks of communication is clearly not limited to the research and development context.

And so, while there are obviously numerous ways to conceptualize the evaluative influences on individuals in the contemporary organization, I want to argue for one that builds off the insights above. Specifically, I suggest that understanding social influence in today's organizations requires understanding the structural influence of (1) *the formal organization*, characterized by the use of project teams and the division of the organization into formal subunit, and (2) *the informal organization*, characterized by communication across informal networked relationships. Visually, the following structures are imposed onto a set of individuals from a real organizational structure in Figure 2.

_____

Insert Figure 2 about here

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As the smallest formal structural division of work, the project team exists inside and/or across larger formal organization subunits. Groups are organized as a set of individuals pulled together to work on the development of a project. Such divisions are likely to influence evaluation by differentially shaping the way people value the projects on which they are, or are not involved. Research on commitment to a course of action (Staw, 1976; Teger, 1980; Arkes & Blumer, 1985), endowment effect (Thaler, 1980; Kahneman, Knetsch & Thaler, 1990) and sensemaking as committed interpretation (Weick, 2001) best speak to the form of this effect on evaluation. While the involvement bias and in-group effects suggests that

evaluations of one's own initiatives are likely to be positively biased, other work on innovation suggests that ideas from the outside group are sometimes seen as being more creative (Burt, 2004), and that work from internal rivals is likely to be devalued in that it threatens the self (Menon, Thompson, & Choi, 2006).

At the larger formal level of organizational subunits, understanding such influence on evaluation similarly requires understanding how one is likely to differentially evaluate projects that are, or are not within one's formal in-group. Consequently, modeling requires an understanding of the role of a salient in-group on evaluation, and should draw prominently from work on social categorization theory (Sherif, 1966; Tajfel, 1970; Tajfel, 1981) and the not-invented here syndrome (Katz & Allen 1982). From this perspective, it is important to understand if the in-group effect is likely to make innovation from inside the subunit seem more valuable (thus demonstrating an in-group/ out-group effect), or whether initiatives from other divisions of the organization will be more perceived as more valuable as a result of them being less subject to internal critique (Menon & Pfeffer, 2003). Such disagreements on the direction of the group and subunit effects suggests that moving these literatures forward additionally requires understanding the potential moderators of these findings.

Finally, though important for the division of labor across an organization, formal structuring is but one way to view the segmentation of individuals and work, and one that fails to additionally consider the interpersonal dynamics of coordination

and communication across these individuals. There is also good reason to believe that various organizational attitudes might be best explained by this informal pattern of communication and interaction, over and above formal positions and individual characteristics (Ibarra & Andrews, 1993; Rice & Aydin, 1991). The two literatures that best speak to this effect are the role of networks in disseminating information, and the role of networks in social influence. Work on networks as a source of information shows how network proximity (Uzzi, 1996; 1997), and cohesion around a tie (Reagans & McEvily, 2003), among other characteristics, lead to greater sharing of complex information. Work on structural social influence takes this a step further by looking at ways in which ties and shared information are likely to shape the convergence of individual opinions (e.g. Friedkin, 1998; McPherson & Smith-Lovin, 1987).

While we might very well expect communication across the network, social influence from one's peers is not a decided issue. Research on attitude homophily shows how similarity of attitude is often more a function of self-selecting similar others than it is actual persuasion and influence (McPherson, Smith-Lovin & Cook, 2001). Similarly, while research on social influence in the organization has shown an impact of network position (e.g. friendship centrality) on attitudes by way of power and resource control (Ibarra & Andrews, 1994), in addition to an impact of spatial or positional proximity (Rice & Aydin, 1991), the effect of peer social influence on organizational attitudes has been shown be either weak or non-existent.

Modeling the potential influence from the informal organizational structure

requires moving beyond an information sharing approach (e.g. Reagans & McEvily,

2003) by considering how individuals reconcile divergent information when

evaluating an initiative. Furthermore, this work must extend current social influence

models generally (e.g. Friedkin, 1998), and social influence work on attitudes

towards the organizations particularly (Rice & Aydin 1991; Ibarra & Andrews,

1994) by showing whether relational proximity will serve to influence evaluations

of an initiative's promise. If arguing for social influence in this context, a case must

be made on what is different about attitudes towards innovative that make social

influence plausible. Such a case must be made against the alternative explanations

that peers will not influence attitudes, or that attitude similarity is only a function of

self-selection, a process made difficult by the cross-sectional nature of most datasets

(Steglich, Snijders & Pearson, 2009).

Conclusions and Space for Integration

The idea evaluation literature helpfully outlines the heuristic nature of innovation

judgment, as well as the role of individual and process characteristics in shaping

effectiveness in the process. Nevertheless, this work is limited given findings on the

ambiguous nature of innovation and its future success in the market (Simonton,

1997; 1999; 2003a). The logical implication of this work is that evaluation is

decidedly less rational, and consequently more amenable to social influence, than

previously modeled.

I suggest that understanding innovation evaluation in the contemporary

organization requires paying attention to the way in which evaluation is influenced

both by an organization's formal division into project teams and across

subdivisions, and also the informal patterns of connection and communication

across the system. While there is a great deal of work on the formal and informal

effects, this work is by no means consistent in findings, and decidedly fragmented

across proposed mechanisms. In sum, I argue that valuable work on innovation

evaluation in organizations starts with an understanding of the heuristic of

judgment used by the individual evaluator—what I suggest is promise—and then

looks to model the structural influences of this context simultaneously. It is this task

that I pursue in the following chapter.

CHAPTER III: A MODEL OF INNOVATION EVALUATION IN THE CONTEMPORARY ORGANIZATION

Introduction

In the previous chapter, I reviewed the psychology of idea evaluation literature, and developed a heuristic of evaluation relevant to the evaluation of innovation in the contemporary organization. I additionally argued that much of the idea evaluation research theoretically and empirically conceptualizes the evaluator as from a complex social context, focusing primarily on individual skill of evaluation and the role of process in shaping effectiveness (e.g. Dailey & Mumford, 2006; Runco, 2003; Lonergan, Scott & Mumford, 2004; Mumford, Lonergan & Scott, 2002; Basadur, Runco & Vega, 2000; Runco, 1991; Runco, 1993; Runco, 1994; Runco & Smith, 1992; Runco & Chand, 1994; Runco & Vega, 1990). In this way, I suggest this work is partial in scope in its assumption of an overly rational model of evaluation, especially to the extent that there is ambiguity in innovation's future value (e.g. Simonton, 2003a).

To extend this research, I starting with an assumption of innovation's ambiguity, and its corresponding implication that individuals are likely highly susceptible to influence in their evaluations (Pfeffer, Salancik, & Leblebici, 1976), where the specific form of such effects will be determined by the context in which evaluation

occurs. With regards to the contemporary organization, I argued that this context can fruitfully be conceptualized as consisting of both formal and informal structural factors. While we know a great deal about isolated structural influence (e.g. involvement bias, in-group categorization, or network effects), this work is often fragmented in failing to model formal and informal influence simultaneously. In building the following model, I attempt to take seriously the psychological literature in its modeling of the psychological process of judgment, and then attempt to expand this approach in considering how the structure of the contemporary organization will influence the psychological evaluations of an ambiguous stimuli like innovation.

Innovation Evaluation in the Contemporary Organization

Project Group, and the Bias from Involvement

In an organization characterized by division of work into project teams (Senge 1990; Edmondson, 1999), it is important to know how individuals understand the value of projects on which they are, or are not, involved. A positive evaluation bias from involvement might lead to a continuation of projects that should be canceled. Negative bias against projects one is not involved is likely to prevent fruitful collaboration, and thus negate one major potential benefit of more open-source systems in the organizational landscape (Pisano & Verganti, 2008). By involvement on a project, I mean direct engagement in the task at hand, which would be the case when one is a part of a project development team. It should be noted that the crucial

distinction with involvement is not one of origin (assigned to team, or self-selected onto team), but rather one of engagement with the task at hand.

On the one hand, it is conceivable that there would be no relationship between involvement and any specific directional bias—positive or negative. Specifically, if involvement on an initiative gives individuals information that speaks to this initiative's likely downstream value, we might expect involvement to reduce bias, but not necessarily to contribute to any specific directional effect. This is a point argued by those who examine the relationship between judgment delay and evaluation effectiveness (e.g. Basadur, Runco & Vega, 2000; Hallen & Eisenhardt, 2008), and their argument that judgment will improve with greater information about an initiative, a logical corollary of involvement. However, the assumption of innovation's ambiguity (Simonton, 1999) suggests that bias reduction from more information would be limited. Given ambiguity, more information will not necessarily correspond with improved evaluation accuracy, though it might play a role in producing bias (Mumford, Blair, Dailey, Leritz & Osburn, 2006).

One alternative to involvement's role in increasing evaluation accuracy bias is the argument that involvement will lead to a positive evaluation effect, making an individual more likely to see the projects they are involved on as especially promising. Specifically, involvement in an initiative is likely to make an individual feel as though they have some control over the eventual outcomes of a specific initiative. To the extent that this influence is seen as being essentially positive, we

might expect involvement to lead to more positive promise evaluations. Runco and

colleagues (Runco 1993; Runco & Smith, 1992) demonstrate that idea evaluation is

subject to the fundamental attribution error, in that individuals will over-emphasize

dispositional influences and under-emphasize situational factors in predicting the

future success of an initiative. Taken together with individual's overconfidence (e.g.

Lovallo & Kahneman, 2003), dispositional emphasis should lead individuals to

overestimating their influence on the initiative, and also positively sway the judged

outcome of such involvement. The literature on entrepreneurial decision-making

and overconfidence is supportive of this bias as well. Specifically, Cooper and

colleagues' (1988) study of nearly 3000 entrepreneurs found that 81% believe the

initiative on which they are involved has a 70% chance of success or more, and a

third believe their chances are 100% certain (c.f. Bernardo & Welsch, 2001).[7]

Work on the endowment effect similarly lends support to the argument for a

positive evaluative bias. This research shows that ownership of an object will

increase an individual's willingness to sell price beyond their willingness to buy

price for that object (Thaler, 1980; Kahneman, Knetsch & Thaler, 1990).

Overvaluation may also not happen immediately, but manifest itself in a tendency to

grow in one's commitment to a course of action over time (Staw, 1976; Teger, 1980;

Arkes & Blumer, 1985). Green, Welsh and Dehler's (2003) argue that managers in

research development projects are biased against de-investing because of a

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[7] While the case of the entrepreneur's confidence may be confounded by
dispositional confidence or self-selection mechanisms (Bernardo & Welsch, 2001), it
is at least plausible that this effect is related to or supported by involvement.

pressure to maintain consistency with the internal advocacy they themselves

bestow upon the project. This is a bias that holds in innovation investment contexts

like venture capital (e.g. Guler, 2007). In this setting, Guler suggests (2007):

> They (venture capitalists) frequently stated that they may become
> "emotionally attached" to a venture because they work closely with it.
> Investors who evaluated a venture early and worked with it over time might
> fail to spot critical problems in a timely manner or avoid accepting new
> information in order to justify earlier commitments (p. 258)

One could argue that individuals will only over-estimate the promise of initiatives

that they have chosen to work on, as opposed to those on which they were assigned.

In other words, it is possible that the causal direction moves in the opposite

direction where people choose to involve themselves on initiatives that they already

see as promising. From a prediction standpoint, this suggests there should only be a

positive relationship between involvement and promise evaluations in

organizations like Google where engineers are encouraged to spend 20% of their

time on developing their own projects, and thus have more autonomy in their

selected work (Google, 2009), but not when individuals are assigned to projects

outside of their control.

Research on organizational sensemaking seems to refute this point however, and

instead suggests that bias from involvement should hold regardless of autonomy in

initiative selection. Building off of Salancik and Pfeffer's (1978) suggestion that commitment binds an individual to their behavior, Weick (2001) argues that positive bias does not require choice, but may in fact be enhanced by being selected to work on a project. Specifically, in so much as "reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs" (Weick, 1993: 635) being assigned to a project allows for social explanations like "they hoped we would do it, hinted it should be done, created the chance to do it" (2001: 15). Taken together, these factors lead to the following hypothesis about the relationship between involvement and promise evaluations.

   Hypothesis 1: Individual involvement in an initiative is positively related to an
   individual's evaluation of that initiative's promise.

While involvement is likely to lead to positive bias, it is not clear how bias might differ amongst those involved. One perspective is that group members should not differ much in their opinions at all, and that the opinion of the group generally should also be the opinion of all those individuals on the group. This can be argued based on the fact that groups are known to converge towards similarity of opinion either because the opinion of the group becomes normative (Sunstein, 1999), or because of similarity resulting from shared information (Deutsch & Gerard, 1955). Summarizing these mechanisms, Sunstein (1999) writes, "people want to be perceived favorably by other group members, and also to perceive themselves

favorably. Once they hear what others believe, they adjust their positions in the direction of the dominant position," (p.13).

In contrast, I argue that individuals will meaningfully differ in their evaluations of the projects on which they are involved, and that such differences can be predicted by characteristics of that individual and their social environment. Specifically, if sensemaking as committed interpretation (Weick, 2001) makes individuals see the projects on which they are involved on as more promising, individuals will differ in evaluations if certain individuals are more susceptible to committed interpretation process than others. In his work on sensemaking, Weick (2001) suggests that the primary influence on committed interpretation processes is the set of social relationships around an individual evaluator. Specifically, "as actions become more public and irrevocable… they become harder to undo; when actions are also volitional, they become harder to disown. When action is irrevocable, public and volitional, the explanations become less causal because more is at stake" (p. 13-14).

One factor that is likely to influence the public nature of an individual's involvement is one's status in the organization. The higher one's status in the organization, the more public their commitment to their innovative initiatives, and the more likely this involvement will corresponds with innovative expectations either from themselves or from others. In addition, it should not matter the origin of one's status, whether it is of a diffuse or specific variety (Bunderson, 2003), but only that an individual's perception of being high status will lead to greater pressure to make

sense of one's involvement or lack of involvement on innovative initiatives. From a sensemaking perspective, I suggest that high status individuals will be *more* susceptible to sensemaking as committed interpretation, and thus demonstrate greater resulting bias towards the promise of initiatives on which they are involved.

In addition, when not involved on a project, higher status individuals should be more likely to devalue these projects in evaluation. Menon, Thompson and Choi's work (2006) suggests that individuals will devalue the work of those whose success would threaten one's own status, specifically by responding defensively to these ideas (Fein & Spencer, 1997). In the case of individuals of high status in the organization, the success of innovative projects outside of one's involvement will be a threat in that they might serve to transfer one's status over to other individuals who were involved. Taken together, these arguments lead to the following hypothesis:

> **Hypothesis 2**: Individual status moderates the relationship between involvement and promise; specifically, the relationship between involvement and promise will be stronger (i.e., more positive) when status is high than when it is low.[8]

The expected plot of this relationship is pictured in Figure 4.

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[8] While originally hypothesized with the construct innovator status, in this paper I hypothesize an influence of status generally, and then test it both by way of innovator status and status as work experience.

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Insert Figure 4 about here

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Formal Organizational Subunits and Evaluative Influence

While involvement in an initiative at the team level is likely to explain some variation in evaluation by individuals in an organization, it says nothing about the differences amongst those not directly involved on a project's but still related to the initiative by virtue of the organization's division into formal subunits. From an evaluation standpoint, the question is whether initiatives from one's own subunit should be seen as more promising than those of alternative subunits. While a specific individual's location relative to a project in the organization is likely to influence their evaluation of its promise, the form of the relationship is by no means self-evident. As Tsai (2002: 180) argues:

> In today's multiunit organizations, many units are forced to both compete and cooperate with each other. This paradox has become a major challenge for multiunit organizations that seek to manage their internal knowledge flows. Organizational units like to learn from each other and benefit from new knowledge developed by other units. At the same time, these units have to compete with each other for internal resources and external market share.

In other words, it is possible that the directional influence could be one of positive

bias for in-group projects when there is competition or fracturing between units, or a positive bias towards out-group projects when there is an emphasis on coordination across the organization.

The strongest case for a positive in-group evaluation bias comes from work on social identity theory (Sherif, 1966; Tajfel, 1970; Tajfel, 1981). When applied to project evaluations, social identity theory suggests that the way projects categorize projects, as within or across subunit lines, will influence their evaluations of these initiative's worth, specifically with the in-group being seen more favorably. While originally formulated to explain how individuals categorize and evaluate *people* as part of an in- or out-group, social identity theory holds implications for the evaluation of objects or initiatives in the organizational setting (Ashforth & Mael, 1989). Focusing on this mechanism, researchers have found that individuals tend to affirm internal ideas over those from the outside, resulting in a "not-invented here" (NIH) bias against ideas from other subunits (Katz & Allen, 1982). Specifically, "managers within an organization often cohere in closely knit in-groups and come to see the knowledge that insiders possess as superior to knowledge that lies outside the walls of their institution" (Menon & Pfeffer, 2003: 497).

A positive in-group bias could also emerge from the additional information one is likely to have about initiative in their home unit given the way such information tends to result in a positive bias (Heath & Tversky, 1991). Huberman (2001) for example empirically demonstrates this information bias in an archival analysis of

44

the geographic investment behavior of Regional Bell Operating Company

shareholders. He concludes, "people look favorably upon stocks with which they are

familiar and think of them as more likely to deliver higher returns, at lower stock-

specific risks" (p. 677). Because individuals are likely to have greater awareness of

projects in their own subunit, they should be similarly likely to demonstrate a

favorable bias towards such initiatives. In sum, given an organization divided into

relatively autonomous subunits, and the argument that such division will shape

individual identification with and awareness about initiatives within one's own

subunit, I hypothesize that projects from inside one's subunit will generally be

evaluated as more promising than those projects from one's organizational out-

group.

> **Hypothesis 3**: Initiatives from one's formal organizational subunit will be
>
> seen as more promising than initiative's from outside of one's formal
>
> organizational subunit.

Recently, work by Menon and colleagues suggests that ideas from the outside—in

this case, outside of one's formal subunit—might sometimes be perceived as having

more value than ideas from inside. Specifically, Menon and Pfeffer (2003) argue that

individuals may prefer ideas from the outside when (1) they gain status from

learning from external competitors, versus those that are internal, and (2) the

knowledge from the inside is more readily available, and thus subject to more

scrutiny. Menon, Thompson and Choi (2007) extend this argument in showing how

using knowledge from internal rivals is less likely because it threatens the self, and individuals assumed they would lose more status by using the knowledge of these individuals. In contrast, using knowledge of external rivals evoked no such effect, and in fact they found the opposite in that greater threat from the external rival led to more positive evaluations. While not discrediting the potential of in-group bias, this work highlights the importance of looking at contingencies of the proposed effect.

Work on social categorization argues that categorization bias is in part a function of the *saliency* of the in-group/ out-group distinction (Ashforth & Mael, 1989). Consequently, experiences that decrease the saliency of the in-group should serve to suppress any in-group evaluation bias. One factor that is likely to decrease the saliency of in-grouping by subunits is the evaluator's interactions with individuals across subunit boundaries of the organization. Specifically, the greater one's communication and interaction across the organization (e.g. the more they interact with individuals located across multiple subunits of the organization), the more likely they should be to see the organization as a whole entity, rather than a set of distinct subunits. While previous work argued that individuals are quite adept at moving between multiple identities (Ashforth & Johnson, 2001), and that they might compartmentalize specific identifies in action (Brewer & Gardner, 1996), recent work by Ashforth and colleagues (Ashforth, 2007; Sluss & Ashforth, 2008) argues that individuals sometimes meld identifies into more holistic identity constructs.

While not necessarily the same as having multiple identities, a diverse network

provides individuals with second-hand access to other individual's experiences, and

makes alternative organizational identities more salient. As such, it is at least

plausible that interaction with individuals across multiple subunits of the

organization would make the in-group / out-group distinction *between* units less

salient. Previous research on networks and decision-making has found a positive

relationship between heterogeneity of experience in one's network and one's

decision performance (Beckman & Haunschild, 2002), and this decision

improvement is decidedly similar to the evaluation bias reduction effect I argue for

here. In sum, I hypothesize that a diversity of interaction partners across the

organization will moderate the relationship between initiative categorization and

promise evaluations making the bias against the out-group (and towards the in-

group) less strong for these individuals.

> **Hypothesis 4**: The subunit location diversity of one's alters moderates the
>
> relationship between the subunit location of an initiative and an individual's
>
> evaluations of its promise; specifically, the relationship between project
>
> home subunit location and promise will be weaker (i.e., less positive) when
>
> they communicate with individuals from a more rather than less diverse set
>
> of subunit locations.[9]

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[9] In the dissertation proposal, I argued for this effect from the perspective of individual experience diversity rather than network experience diversity. However, in this organization, individuals were severely limited in their experience diversity, with the majority of individuals (92.5%) having only worked in their current subunit while at the focal organization. Consequently, I adjust this hypothesis to

The expected plot of this relationship is pictured in Figure 5.

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Insert Figure 5 about here

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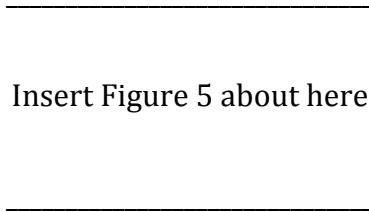
The Transfer of Opinion Across the Informal Organization

Network ties are clearly a prominent source of information related to the

development of innovation in the contemporary organization. There is in fact a great

deal of research on the relationship between network ties and the generation of

creativity and innovation. Weak ties have been shown to speed up the completion of

innovative projects when the knowledge is non-complex, but strong ties are needed

for the transfer of complex information needed for project completion (Hansen,

1999). Ties across the organization help individuals come up with creative ideas

(Brass, 1995; Burt, 2004; Kanter, 1983) and both weak ties outside the network and

closeness centrality are likely related to creativity in curvilinear fashion, helping up

to a point beyond which there might be further constraint (Shalley & Perry-Smith,

2001).

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suggest individuals might gain the benefits of the outlined diversity vicariously
through those whom they interact with across the organization.

The relationship between network ties and evaluation of generated innovation is a significantly less explored topic. And yet, because innovation is ambiguous, judgment of its value is likely relatively amenable to such influence. Ignoring such potential influence and looking only at the formal organization is a mistake as, "many of the actually existing patterns of human interactions have no representation in the formal organization at all," (Roethlisberger & Dickson, 1939), and the informal patterns of communication and coordination has been shown to influence organizational attitudes over and above the effect from formal structure (Ibarra & Andrews, 1993; Rice & Aydin, 1991). But as Gartrell (1987; c.f. Ibarra & Andrews, 1993) notes, "it is one thing to say that networks have an effect on social evaluation processes and quite another to say precisely what the effects are" (p. 59). In the following section, I work to formally model the way in which individual evaluators are likely to be influenced by the evaluations of their networked peers.

How might we expect the opinions of those one goes to for information (alters) to affect one's judgment (ego) of an initiative's promise? Uzzi (1997) persuasively argues for the role of networks in disseminating information in his study of inter-firm networks in the women's better-dress industry.[10] In this qualitative piece, he finds that relationships facilitate the spread of fine-grained information, allow for the arrangement of joint problem solving, and reflect trust. As such, networks function heuristically to transfer information and opinions, and thus help conserve

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[10] While Uzzi (1997) speaks to interfirm network, his analysis of the mechanism relies on an individual level of analysis- the relationships between heads of firms. Thus, his work is highly applicable to more micro-level individual network theories.

cognitive energy in figuring out valuations for the focal individual. This understanding of networks as a source of information theoretically aligns with McEvily, Perrone, and Zaheer's (2003) argument for networks as an organizing system of information, facilitated by trust between networked individuals.

But when individuals receive opinions on the value of projects from multiple sources, how are they likely to reconcile this divergence? One relevant theory that speaks to this question is the social influence network paradigm. This work mathematically models the influence of multiple sources of information relevant to evaluation (e.g. Friedkin, 1998, Friedkin & Johnson, 1990; Friedkin & Johnson, 1999) and shows how individual attitudes are jointly a function of some exogenous influence of non-network factors from the environment, and also endogenous influence by some weighted combination of one's networked alters. The argument for social influence from one's peers is made from a cognitive dissonance reduction perspective. Specifically, in so much as alter opinions reflect their general belief about what is the likely value of a specific initiative, an individual's deviance from such evaluations will create cognitive dissonance (Festinger, 1957). Moving towards the evaluations of one's peers over time, and specifically an equal weighting of such evaluations, is plausible in so much as it reduces the cognitive dissonance of the focal evaluator to a more desirable state.

Other empirical work suggests that social influence amongst one's peers is less likely in many contexts. Specifically, while individuals are often similar in attitudes

to those with whom they interact, this phenomenon is often driven by individuals

self-selecting alters with similar opinions, over and above social influence

(McPherson, Smith-Lovin & Cook, 2001). In a review of this literature, McPherson,

Smith-Lovin and Cook conclude that selection maintains a stronger effect than

influence or attrition with regards to observed attitude similarity amongst a group

of people. In the organizational setting, while finding an impact of network position

on attitudes, Ibarra and Andrews (1993) argue against peer social influence in

showing that "focal actors' perceptions tended to be unaffected by the perceptions

of those with whom they had direct contact in the advice network" (p. 295). Rice

and Aydin (1991) similarly find that relational proximity in networks is less

influential on attitudes that other forms of proximity—specifically, spatial and

positional. The spatial argument suggests that it is not social relationships that

maintain influence but rather exposure to similar stimuli. The positional argument,

along with Ibarra and Andrew's (1993) argument for network position, suggest that

networks maintain influence primarily by shaping power, positioning, and resource

control, and not necessarily through social influence from one's peers.

Nevertheless, I suggest there are several reasons to believe that peer-influence will

have an effect on individual's attitudes on the promise of innovative initiatives in an

organization. First, as already argued, influence is more likely when there is greater

ambiguity about the object in question (Pfeffer, Salancik, & Leblebici, 1976),

something that is decidedly case with innovation. Second, while certain

organizational work has failed to find significant social influence (Ibarra & Andrews,

1993, Rice & Aydin, 1991), attitudes towards specific initiatives in the organization should be different than attitudes towards the organization more generally (e.g. 'this is an innovative company') in that relevant knowledge about the value of specific initiatives is more likely distributed across the organization, thus making one's peers a potential valuable source of information in evaluation. This is in contrast to, for example, attitudes about the organization more generally (such as its culture), where more people might feel they have a valid opinion, and expertise is less distributed. Finally, if similarity amongst one's peers does exist, this environment resists the alternative explanation that individuals are only selecting for individual with like-minded views. Specifically, while it is clearly possible to interact only with those of similar beliefs with regards to highly salient issues or characteristics like race, gender, or religious affiliation, such homogenous selection is decidedly more difficult when there are multiple objects of evaluation. For example, if individuals have opinions about various initiatives across an organization (A, B, C, D), along what initiative is one likely to self-select for similarity? And, even if they do select for similarity of views on project A, for example, there is still likely to be some differences in evaluations on objects B, C, and D.

Taken together, I hypothesize that individuals are likely to move towards the promise evaluations of those they go to for information over time by way of social influence.

Hypothesis 5: An ego's evaluation of an initiative's promise is positively

52

related to the aggregate promise evaluations of those individuals to whom he or she goes for information.

Thus far, my argument has been that alter promise evaluations will influence an ego's evaluation, primarily driven by a desire for dissonance reduction. This argument is relatively crude however in implying that all individuals will be *equally influential* in such social influence. In other words, I do not suggest that the ego is likely to be more influenced by certain alters than others, nor what heuristic individuals are likely to use in their discernment of such sources of information. And yet, Friedkin's (1998) structural model of social influence posits that individual opinion change is in part a function of an individual's unique influentability in a dyad. To address this argument, I posit two different ways that individuals might weigh the evaluations of their connected alters, to better enlighten the underlying mechanism of influence.

First, I suggest that an individual's unique influntiability is in part a function of the context of their relationship with that specific alter: specifically the social cohesion around this relationship. I follow Reagans and McEvily (2003) in their distinguishing of social cohesion from relational strength, and their conceptualization of the former as a set of dense third party relationships surrounding two individuals. Social cohesion is likely to influence evaluation for various reasons. First, social cohesion increases the salience of the information an alter brings in interaction, as this information is more likely to be shared, and more

likely to be sought out by the ego. One of the arguments Rice and Aydin (1991) leverage against social influence is that it depends on an individual knowing the actual opinions of their alters, a skill not thought to be exceptionally prevalent amongst individuals (Rice & Mitchell, 1973). And yet, this is far less likely to be a problem in cohesive environments where information transfer is eased by tight cohesion around a social relationship (Reagans & McEvily, 2003). Specific to innovation, Chua, Morris and Ingram (2009) find that active discussion of new ideas is highly related to the embedding of that focal alter amidst all other alters in the ego's social network.

In addition to increasing the salience of their information, individuals should also be more motivated to reduce dissonance with those they are cohesively tied. Ferrin, Dirks and Shah (2006) suggest that network closure and positively influences trust between individuals. From an influence perspective, trust should make the information passed more influential, as "an employee may place considerably more value on … judgments obtained from a trustworthy third party than on judgments from a third party who is not deemed trustworthy" (p. 875). This value might either reflect a sense in which it is more accurate information, or that it is worth listening to because that relationship is important. In either case, individuals should be more moved towards dissonance reduction with those whom there is greater social cohesion in that this reflects and facilitates trust in the relationship. In sum, I hypothesize:

Hypothesis 6a: An ego's evaluation of an initiative's promise is positively related to the aggregate promise evaluations of those individuals to whom he or she goes for information when alter opinions are weighted by their social cohesion with ego.

In addition, I suggest the social influence of specific alters on the promise evaluations of the ego will be influenced by the relevance of the information such alters have about the initiative in question. Thus far, I have argued that individuals will gravitate towards the evaluations of their peers because this reduces the dissonance they are likely to feel with these interaction partners. And yet, it is also possible that individuals will be motivated in attitude change by reasons other than dissonance reduction; specifically, individuals might also change their attitudes with a goal of having more accurate attitudes towards the world (Wood, 2000). In this way, I suggest individuals will pay attention to the relative validity of information each alter brings about the initiative in question, or the extent to which an individual is aware of the initiative in question.

In situations concerning evaluations of specific initiatives within some social space of the organization (i.e. a project in a specific division of an organization, worked on by a specific group of people), individuals will vary considerably in the extent to which they are aware of the initiative in development. For example, if one person works directly on the project, and another has never heard of the project because of their location in the organization, the former individual should have more relevant

information about the initiative in question. If individuals are driven by accuracy

motivations, the ego should also be more influenced by the former's assessment of

the initiative in question. This is consistent with recent work by Borgatti and Cross

(2003) showing how information seeking in one's network is contingent on finding

that information to be of value. In sum, I hypothesize that individual alters will be

more influential on the opinion of a specific ego when they have more relevant

information, specifically by greater awareness of the initiative in question.

Hypothesis 6b: An ego's evaluation of an initiative's promise is positively

related to the aggregate promise evaluations of those individuals to whom he

or she goes for information when alter opinions are weighted by their project

awareness.

Hypotheses are summarized in Table 3 and visualized in Figure 3.

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Insert Table 3 about here

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Insert Figure 3 about here

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Conclusion

The outlined model extends the literature in several key ways. Taken together, I attempt to answer how the structural design of the contemporary organization will shape the evaluation of innovative initiatives by individuals located across that system. Specifically, I identify a heuristic of evaluation used by individuals in their assessment of innovation. Second, by explicating the formal and informal design of the contemporary organization (formal division of projects into project teams, division of the organization into subunits, and connection and communication of individuals across an informal organization), I theoretically identify the factors most likely to influence evaluation, and then explicitly define their influence. In the following chapter, I lay out a method to test the outlined theory and corresponding hypotheses, and additionally summarize the results of the empirical assessment.

CHAPTER IV: DATA, METHOD, ANALYSIS AND RESULTS

Organizational Site

To study the formal and informal influences on evaluations of innovation's promise in the contemporary organization, I conducted a field study of employee evaluations in the research and development divisions of a Fortune 500 agribusiness company. Structurally, the larger organization was decentralized internationally across highly autonomous regional business subunits. The focal research and development unit was spread across four continents, with presence in North America, South America, Europe and Asia. This group worked on projects with timetables ranging from the very short run (immediate customer response issues), to those with a longer-development window (e.g. 5 to 10 years). Many of the longer-term projects were developed in a separate long-term innovation group functionally separate from the four regional subunits, while located geographically in North America. All together, the organization was separated into 5 separate subunits (North America, South America, Europe, Asia, Long-term innovation group). Subunit size ranged from 3 (Asia) to 39 (Europe) employees.

The research and development group consisted of scientists and managers, with the majority having some type of scientific training and/or background. Within subunits, individuals were segmented by product-line or agriculture-specialty. Work structuring was either individual or team-based, depending on the initiative. When team based, most of the projects took place by collaboration within, rather that

across, organizational subunits. Individuals were most often involved on multiple projects at a time.

In the year prior to the study, the organization expressed a desire to increase collaboration across subunits of the organization, and initiated several programs to facilitate this goal. Most directly, the organization instigated the first of a series of annual global research and development meetings where subunit directors, project managers and individual scientists could meet and present information on initiatives to other employees across the global organization. Previously, cross-regional coordination emerged informally across scientists or additionally facilitated by conference calls between upper level management (R&D directors), with the task of information dissemination left to these directors and their managers. The first meeting took place one month after the first round of data collection for this study.

This site is appropriate to test the outlined model for several reasons. First, the evaluative construct of promise is relevant to innovation in the research and development context. When deciding what research projects to pursue, a scientist or manager is evaluating whether a project is a worthy use of her time and the time of the larger organization. These evaluations are based on whether she will have the ability to bring the project to fruition given her background (capability fit), whether it fits in line with the agenda of the organization, (goal fit), and whether the project will demonstrate relevant return, measured both financially (direct return), and in a

longer time frame by its opening up new routes forward in the organization and market (generative potential). In addition, this organization reflects the form of the contemporary organization as outlined with its project-team structuring, a division into subunits based on regional segmentation, and also because of the demonstrated importance of network ties in research and development organizations (Hansen, 1999).

Data Collection Procedures

The primary contact for the study was the director of the long-term innovation subunit. In the late summer of 2008, he provided a detailed roster of managers and scientists from across the organization, totaling 106 individuals. I then developed a survey for the study which included various measures necessary to test the outlined theory, including but not limited to social network measures, measures assessing project valuation, and questions on demographic characteristics and previous work experience. Using the identified roster, the first round of data was collected through an online survey in the fall of 2008, with responses allowed over a period of 2.5 weeks. Two reminders were sent to potential respondents by email with 1.5 and .5 weeks to go. In the following fall, approximately one year after the first survey, I repeated the survey with 97 individuals from the same organization. This survey was also conducted online, with responses allowed for a period of 2.5 weeks. The difference in rosters across the two data collection points was accounted for by slight employment changes in the organization.

80 individuals responded to the first survey out of the potential 106, for a response rate of 76%. In the second round survey, 72 individuals responded out of the potential 97, for a response rate of 74%. After accounting for individuals responding to the first survey or second survey only (because of employment changes from Time 1 to Time 2, and/or those who responded to one survey and not the other), I constructed a longitudinal dataset with 54 individuals. This number was out of a potential 81 individuals who were included on both rosters, for an overall response rate of 67%. It is this longitudinal dataset that I used for testing of the formal model in that it facilitated a better isolation of causality in attitude influence (Steglich, Snijders & Pearson, 2009).

Finally, 3 months after the Time 2 survey, I conducted a series of semi-structured email interviews with 11 scientists identified by regional managers as having appropriate insight into processes of innovation evaluation at the organization (3 North America, 3 South America, 3 Europe, 2 long-term innovation group). Questions focused on the structure of the underlying dependent variable (promise), and on further exploration of the mechanisms underlying the structural antecedents of promise. While not expansive enough for an in-depth qualitative study, I draw from the interviews to the extent that they further clarify the phenomenon of interest.

Dependent Variable:

<u>Initiative Promise</u>: Prior to the first round of data collection, the organizational

contact identified 3 projects from four of the subunits (North America, South

America, Europe, and the long-term innovation group). Projects were not identified

from the Asian subunit, as that was the smallest and newest of all the groups, with

significantly fewer initiatives in development. Regional directors were then asked to

write short descriptions of each initiative (2-3 sentences). In the survey, all 12

initiatives were listed along with their short descriptions, and respondents were

asked to rate each of these projects along various dimensions. The same projects,

descriptions and measures were retained in the Time 2 survey.

Given that the projects were identified based on their general value in the eyes of

management, it can be argued that there is selection on the dependent variable, with

managers only picking projects they perceive to be especially promising. While this

might be the case, I specifically asked the director to select projects based on their

size or prominence within the subunit, rather than necessarily being 'sure fire' hits. I

asked for these projects because of their likelihood of greater awareness across

subunit lines.

Initiative promise was measured using a 5-item scale developed for this study based on my definition of promise. Specifically, individuals were asked whether: (1) this project shows significant promise as an innovative opportunity for (organization name), (2) this project directly matches (organization name)'s organizational goals, (3) this project matches (organization name)'s specific capabilities, (4) this project demonstrates great future revenue potential, and (5) this project points to other significant future possibilities. All items were measured on a 7-point Likert scale ranging from 1= "very strongly disagree" to 7 = "very strongly agree."

Independent Variables:

Initiative Involvement: For each of the twelve projects, individuals were asked to indicate their awareness of the focal initiative. Specifically, after each project description, individuals were asked "to what extent were you aware of (Project Name)?" The measure was a 5-point Likert Scale with potential responses including 1= "not aware," 2= "heard of project but unaware of details," 3= "some awareness of project details," 4= "significant awareness, but not involved," and 5="personally involved on the project." To measure individual involvement in the initiative, I dichotomize this response based on whether they responded at the level of 'personally involved in the project' (5) or not (1-4). I dichotomize at 5 as opposed to, for example, 1-3 and 4-5 as 5 is the only formal structural measure of involvement, as opposed to general awareness of an initiative.

Initiative Home Subunit Location: The measure of an initiative being from one's home subunit is also a dichotomous measure, coded 1 if the project is within the individual's home subunit (e.g. a North American initiative rated by a North American scientist) and 0 if the project is from outside the individual's home subunit (e.g. a Europe initiative rated by a South American manager).

Network Data: The survey included three separate network measures of (1) who one goes to for information, (2) who one goes to in order to discuss new ideas, and (3) who one has a good sense of their expertise. Individuals responded to these questions by selecting individuals from a list of employees, sorted by subunit, and arranged alphabetically by first name. All measures were dichotomous (yes/ no). In addition, I included a free response network measure, where respondents identified individuals who they thought were involved in developing the best ideas in the organization, with responses capped at 12.

Status: Status was measured in two different ways given that I argued it should not matter whether the status comes from diffuse or specific cues. First, I measured status specific to one's reputation as innovator in the organization. This was constructed from the free response network question of "who is involved in developing the most innovative ideas at (the focal organization)?" Specifically, I constructed a count from the 2008 individual identifications of all 54 individuals who responded to both surveys. For example, if Michelle, Mike and Miguel all identified Jim as an individual who is involved in developing the most innovative

ideas, Jim's status as an innovator would be 3. If Miguel on the other hand had 10

people identify him as such, his status would be 10. In addition, I measured status by

way of work experience. This operates under the assumption that it is not only

specific cues (e.g. innovator status) but also diffuse characteristic like work

experience that speak to one's status in the organization.

Alter Subunit Location Diversity: I measured the diversity of one's interaction across

the organization with a modified version of Blau's index (1977), a measure of

diversity as variety. Specifically:

$$Alter\_Subunit\_Experience\_Diversity = 1 - \sum p_k{}^2$$

In this measure, 'p' is the proportion of one's alters in each of the organizational

subunits (North America, South America, Europe, Asia, Long-term innovation

group). Variety = 1 when experience across divisions is of equal spread across all 5

groups. Variety = 0 when all of an individual's networked peers come from the same

subunit, most likely their own.[11] I used a measure of diversity as variety as this best

reflects the underlying mechanism of exposure to a spread of individuals across the

organization; consequently, I suggest this most likely facilitates the creation of

identification with the organization as a whole rather than with the focal

individual's subunit, or another subunit in the organization.

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[11] While variety = 0 is possible when all of individuals interaction partners come
from another subunit, and none from their own, this was not likely in the case of this
organization as individual interaction tended to clustered within their own subunit.

Alter's Promise Evaluations (Equal Weighting): I constructed an equally weighted average of the promise evaluations of all individuals to whom one goes for information at Time 1. So, if an individual goes to three people for information at Time 1 who rated the initiative in question with promise evaluations of 4,5, and 6 respectively, then an equal weighting of these evaluations is (4+5+6)/3 = 5.

Alter's Promise Evaluations (Weighted by Social Cohesion): For cohesion-weighted measures of promise evaluations, I constructed a weighted average of the evaluations of each ego's alters based upon the differential social cohesion between each dyad at Time 1. Again, assume that an individual goes to three people for information at Time 1, each of whom rated the initiative in question with promise evaluations of 4,5, and 6. To differentially weight these evaluations by cohesion, I first constructed a measure of social cohesion using a network closure measure as outlined by Wasserman and Faust (1994, c.f. Ferrin, Dirks & Shah, 2006). Specifically, I matrix multiplied the dichotomous information network by itself so that every cell, X_{ij}, represents the number of all other potential employees who go to both individuals for information. Higher numbers indicate greater social cohesion. This is a modified measure of social cohesion as outlined in Reagans and McEvily (2003), in that both focus on density of third party ties, even while Reagans and McEvily additionally incorporate the relational strength of those ties. With regards to the actual constructed weighted matrix, if an ego's respective cohesion with the previously mentioned three alters was 10, 5 and 2, the calculation of the weighted matrix is (4*10 + 5*4 + 6*2)/ (10 + 4 + 2) = 4.5.

Alter's Promise Evaluations (Weighting by Awareness): I followed a similar

approach in constructing an awareness-weighted average of the promise

evaluations of individuals to whom one goes for information at Time 1. Assume

again that an individual goes to three people for information at Time 1 who rated

the initiative in question with promise evaluations of 4,5, and 6 respectively. Alter

initiative awareness is measured by the alter's response to the awareness scale,

rated from 1 to 5. If an individual responded to the awareness of an initiative with a

5 (personally involved on the project), then their weighting would be more than an

individual whose response to the awareness scale is a 2 (heard of project but

unaware of details). So, if the individuals identified from the previous weighting

example were aware of the initiative at respective levels of 2, 4 and 5, the weighted

matrix of this evaluation is (4*2 + 5*4 + 6*5)/(2+4+5) = 5.2727.[12]

Control Variables: Previous theory and research suggests that education and

experience may be associated with the extent to which individuals engage in

innovation (Farmer, Tierney, & Kung-McIntyre, 2003; Kimberly & Evanisko, 1981;

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[12] While possible that individuals only pay attention to those that are involved on
the initiative in question (awareness = 5), I avoid weighting by involvement alone
(1,0) for two reasons. Theoretically, while individuals should pay more attention to
those involved on a project, I would not expect them to ignore those with significant
relevant awareness of the initiative, even when not involved. As currently modeled
by awareness (1-5) rather than involvement (1,0), this approach allows for greater
weighting of those involved in the initiative without discrediting those with still
significant awareness whom are not involved. Secondly, creating an involvement-
weighting matrix provides several empirical problems, resulting in the loss of
significant data. Specifically, given the limited number of individuals actually
directly involved on an initiative, there is a corresponding high probability of any
individual not interacting with involved individuals, and thus having no alter
evaluations to weight, and resulting in a missing data-point.

Mumford & Gustafson, 1988; Obstfeld, 2005; Smith et al., 2005; Zhou, 2003; Baer 2008). Consequently, I controlled for highest educational experience (1= Bachelors, 2= Some Masters, 3= Masters, 4= Some doctoral, 5= Doctoral), and years of full-time work experience. Additionally, I controlled for the gender of the evaluator (1= male, 2= female), and formal position in the organization, the latter measured by self-identified roles, with higher numbers indicating higher positions in the organizational structure (1= scientist/ technologist, 2= manager, 3= R&D Director). Finally, given the longitudinal data, I also controlled for promise evaluations at Time 1 given that the dependent variable in the study is these evaluations at Time 2.

Method of Analysis:

The data was structured such that each data point reflects any specific individual's evaluation of one specific initiative in the organization. This means that the sample size prior to missing data with list-wise deletion of cases was 12 project evaluations * 54 individuals, or 648 individual project evaluations. Given that each evaluation is nested within individuals because they evaluated 12 projects, and also nested within initiatives because of 54 evaluations for each of the 12 projects, I analyzed the data using Random Coefficient (RC) regression. RC regression allows for variance of the regression-intercepts based on higher-order nesting structure. In this specific analysis, I allowed the intercept to vary based on the project being evaluated (Project ID), and/or the individual evaluating the project (Individual ID). The former assumes that evaluations will be more similar within project than across, and the latter that there will be more similarity of evaluation within an

68

individual's 12 evaluations as compared across other individuals. The empirical

justification of such proposed nesting structures was evaluated with their intraclass

correlations (ICC). While it is possible to extend RC regression to an approach where

both the slope and intercept are allowed to vary based on the posited nesting

(Baayen, Davidson & Bates, 2008), this approach is not theoretically relevant to the

outlined model.

Previous organizational models that have simultaneously examined the impact of

formal and informal structure on organizational attitudes (e.g. Ibarra & Andrews,

1993) have done so using a network-effects model (Doreian, 1982). Following

Doreian (1982), the network effects model is as follows:

$$Y = \alpha WY + X\mathrm{B} + \varepsilon$$

In this approach, in using cross-sectional data, the dependent variable appears both

in the explanatory and explained portion of the equation. As such, the model is not

solved numerically and must be instead estimated with iterative maximum

likelihood techniques (Doreian, 1982; Friedkin, 2001).

Following previous research with the goal of modeling the effect of prior states on

future behavior (Vaisey, 2009; Hainey & Osgood, 2005), I take advantage of the

longitudinal structure of the data in using a lagged dependent variable while

controlling for the level of the initial level of the dependent variable at time 1.

Hainey and Osgood (2005) suggest that controlling for previous measures of the

dependent variable allows for the elimination of all possible selection effects in so

69

much as they would be captured in the outcome at previous time periods, and thus provides the strongest case for testing the posited effects. Vaisey (2009) suggests this approach is appropriate for use when looking for the effect of a previous state on future behavior, and not just when looking for the effect of a change in state on a change in behavior. Such modeling additionally circumvents the potential problem of common method variance, and facilitates easier interpretation and attribution of causality in the model. This is especially important with social network variables where self-selection by homophily and exposure to common stimuli are plausible alternative explanations.

Operationalizing "Bias" of Evaluation:

In light of the fact that the "true value" of any initiative is unknown, one could argue that it is impossible to determine bias in this study, but only describe when individuals are more or less positive towards specific initiatives. However, given the triangulation of evaluation (the evaluation of projects by individuals involved and not-involved, by individuals who are in the same unit as the initiative, and those who are in different initiatives), bias should demonstrate itself in the systematic differences of evaluation based on an individual's relationship to that project. As such, in this project I use the language of bias in describing when the same initiative is viewed differently based on the evaluator's formal structural relationship to that project, a factor logically unrelated to an initiative's true value. In other words, when there is no such bias of evaluation, involved and non-involved individuals, for example, should evaluate projects equally in the aggregate; yet, if there is a bias

70

related to involvement, individuals of different positions would evaluate initiatives differently. Given the lack of a specific 'true value,' it is unclear whether such bias makes one more or less positive relative to the true value, and bias can only be addressed relative to the alternative structuring. Consequently, I use the language of bias interchangeably with 'more of less' positive evaluation relative to the alternative structuring, depending on the explanation.

Descriptive Statistics and Correlations:

The descriptive statistics and correlations among all modeled variables are shown in Table 4. Of the 54 individuals included in the final roster, 24 (or 44%) were female, and the average work experience of was 16.7 years. Of the 54 respondents, 32 identified as scientists and of technologists, 12 identified as managers, 3 identified of as Subunit Directors, with 7 not responding with a formal role.

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Insert Table 4 about here

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The highest pattern of correlation is amongst the three differently weighed matrices of alter evaluations. This high correlation is the result of each variable being a function of the same alter's opinions, but with slight variation based on differential weightings. This did not pose a problem for multi-collinearity as these variables

were not included simultaneously, but rather run as alternative models and examined for more efficient model fit.

The correlation between project involvement and initiative home subunit location is also high (r= .43). This was a function of individual involvement in an initiative most often taking place when that initiative is in one's home subunit. However, these are still conceptually distinct variables, as one does not logically imply the other. Specifically, a project being located in one's home region does not mean that an individual is involved on this work; in addition, being involved on a project does not necessarily mean that it is in one's home subunit as one can work on projects that are 'housed' in other regions of the organization (though this occurred much less frequently).

The correlation between one's evaluation's of a project's promise at Time 1 and one's evaluations of a project's promise at Time 2 is also high (r= .50), suggesting that there was some continuity between individual's evaluations over time. The significant correlations between promise evaluations at time 2 and other controls suggest that there is likely to be some type of negative relationship between both gender and promise evaluations (r= -.16), and work experience and promise evaluations (r=-.24).

With regards to the proposed formal structural moderators, individual's status as an innovator is significant in its negative relationships to gender (r = -.23), suggesting

that women in the organization are viewed as significantly less innovative than men. Status as measured by reputation as an innovator among one's peers is also highly related to formal position in the organization (r= .24), and education (r= .26). This either suggests that education is related to one's status an innovator and such ability is accurately reflected in the organizational hierarchy, or alternatively that individuals will cue on diffuse status cues like position and education when attempting to determine who is innovative in the organization. The two measures of status are not significantly correlated with each other, with work experience unrelated to reputation as an innovator amongst one's peers (r = .02). This suggests that diffuse cues of status do not necessarily correspond with specific cues of status. Alter subunit location diversity is positively related to formal position in the organization (r= .41) and education (r= .36) while being negatively related to gender (r= -.23). With regards to the relationship between moderators, alter subunit network diversity is positive and significant in its relationship to both status as an innovator (r= .32) and status as work experience (r = .22). This suggests that individuals with status are more likely to be networked across the organization than those of lower status. The causal direction of this relationship however remains an open question.

Providing preliminary support for the outlined model, both initiative involvement (r= .28) and initiative home subunit location (r= .14) correlate significantly with promise evaluations at Time 2. Given the high inter-correlation amongst these two variables, it is unclear which variable is likely to account for the explained variance

in promise evaluations when modeled simultaneously. With regards to the informal structural influence on evaluation, the correlation between promise evaluations and the equal-weighted average of one's alter's promise evaluations (r= .31), these evaluations weighted by social cohesion (r= .29), and these evaluations weighted by that individual's awareness (r= .31) are all are positive and significant.

Mutli-level Factor Analysis- Promise

To determine the empirical validity of the promise construct given nesting in the data, I conducted an exploratory factor analysis that takes into account the multi-level nature of the data. Multilevel factor analysis (MFA) analyzes the pooled-within and pooled-between matrices, representing the individual and nesting levels respectively (Van der Vegt & Janssen, 2003). Theoretically, I looked for group invariance across projects, making sure that the psychological construct of promise did not function in conceptually distinct ways for different types of initiatives (e.g. goals functioning in the evaluation of one project, but not the other).

Using the 2008 (Time 1) data, I first created a 12 X 5 matrix of project evaluations averaged across all 54 individuals (12 in total), along the various dimensions of promise as outlined (5 in total). I also created an alternative matrix sized at 648 X 12, representing all individual scores and their respective ratings of all 12 projects. I then modified the latter matrix by making each individual evaluation score a measure of deviation from the project mean evaluation. So if an individual answered

6 for the alignment of an initiative to the goals of the organization, and the mean across all 54 subjects for the same measure was 5.6, and their score became .4.

Following the approach of Van der Vegt and Janssen (2003), I ran separated exploratory factor analyses on each of these data sets, and then ran correlation across the two sets of loadings to test invariance across levels. The factor analysis for the group means data removed one factor, accounting for 80.75% of the variance. The factor analysis for individual deviations from the group mean data similarly removed one factor, accounting for 78.90% of the variance. These loadings correlated at .66, a sufficiently high correlation (Cohen & Cohen, 1983) to suggest invariance across levels. To determine invariance across time, I ran an additional EFA on the deviations from group means with the 2009 (Time 2) data. The factor analysis for this dataset similarly removed one factor, accounting for 83.38% of the variance. I then ran a correlation between the loadings on this data, and the loadings on the 2008 deviations from mean data. The loadings correlated at .60, a similarly high correlation.

The underlying structure of the 'promise' construct was also reflected in comments made by scientists at the organization in interviews. With regards to the alignment with goals, one scientist emphasized the importance of "alignment with strategic objectives," and another of the importance of displaying some "value factor" where the objectives are unique to the organization in question. Several scientists emphasized the importance of capability alignment in focusing on "technical

feasibility… operational feasibility and other confirmation stages," or being "within the realm of our core capabilities or knowledge base." Comments about outcomes similarly focused on both direct measures, such as "economic feasibility" and "payback potential," with others that were decidedly more generative in focus, such as "the possibility to learn about new technology."

Testing Multi-level Effects in the Data:

To best account for the multi-level nature of the data, I ran ICC on both nesting by individuals and nesting by projects to determine the amount of variance explained by each level, respectively. The former dimension refers to the argument that there will be more variance across individuals than within individuals in regards to those 12 initiative ratings. The latter dimension suggests that there will be more variance across the 12 project ratings (by those 54 individuals) than there will be within those initiatives. The significance of the nesting effect determined the modeled nesting in the Random Coefficient Regression. With both tests, I looked at Intraclass Correlation and used this as the starting model of the Random Coefficient Regression (Luke, 2004)

I first tested nesting within projects, under the assumption that individuals might converge in some sense on the promise of specific projects. However, the ICC for nesting by projects was < .001, explaining very little of the variance. I then tested the nesting within individuals, under the assumption that individual evaluations will be

more similar a cross their 12 evaluations than they will be when compared across

other evaluators. The ICC for nesting by individuals is .352, suggesting that a good

deal of variance is accounted for by differences across individual evaluators. Given

these results, I account for nesting in the regression by modeling variance in the

intercept only as a function of the individual evaluator.

Regression Results

Empirical distribution of the promise variable suggests that the dependent variable

in the study is positively skewed; specifically, individuals within this organization as

a whole tend to see projects in their organization as having a relatively high level of

promise. An analysis of the normal probability plots of promise suggest a

moderately normal distribution of the residuals, albeit with some deviations nears

the respective tails. Nevertheless, random coefficient regression is relatively stable

to deviations from the assumption of normalty in the variables, and such

distributions did not provide an empirical problem for this analysis (Luke, 2004).

In the following random coefficient regression, I first modeled variation of the slope

by its nesting within individual evaluator (Model 0), and then proceeded by adding

the various controls (Model 1). To test hypotheses 1 and 3 on the main effects of

formal structure, I entered involvement and initiative home subunit location in

Model 2 of the regression. To test the moderators of formal structure (H2 and H4), I

added involvement by innovator status—tested both with status as an innovator

and status as work experience-- and project home subunit location by alter's

subunit location diversity in Model 3. Hypothesis 5 on the informal structure main

effect was tested in Model 4 by entering the equally weighted evaluations of all the

ego's alters. Finally, to test the final two hypotheses with differentially weighted

informal network influence, I compared Model 3 (no social network effect) against

the next two models, the first where the matrix was weighted by social cohesion for

each dyad (Model 5) and the second where the evaluative matrix was weighted by

the different levels of project awareness of each individual alters (Model 6),

Significance of these hypotheses was assessed by an increased effect size of the

differentially-weighted main effects compared to the equal-weighted main effect,

along with greater fit of Model 5 over Model 3 (significance of Hypothesis 6a), and

improved fit of Model 6 over Model 3 (significance of Hypothesis 6b) respectively.[13]

Being that each of the three network models is compared against a non-network

social influence model and not against each other, I additionally compare their

relative explanatory power based on model differences between the three social

network models post-hoc. Specifically, I look for relative fit differences between

models 4, 5 and 6 (AIC), along with differential effect sizes of the weighted social

network evaluations. Though this does not influence the significance of any of the

last three hypotheses, it serves to further enlighten the mechanism underlying

social influence.

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[13] Note that this is not a traditional moderation as posited in the original model;
rather, it is a comparison of three differentially-weighted informal main effects
against a model without informal main effects, and then a post-hoc examination of
which model holds the most explanatory power.

Across all models, overall fit was assessed using the Akaike Information Criterion

(AIK), a measure of deviance between data and the model as a function of maximum

likelihood (Akaike, 1974). AIK has the benefit of incorporating a penalty for a

greater number of parameters (Luke 2004). A drop in AIK indicates improved model

fit. The significance of this drop was assessed by model comparison with ANOVA, a

chi-squared test. Significance of specific predictors was analyzed by examining by

parameter beta weight and their corresponding t-values. The results of all these

analyses are summarized in Table 5.

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Insert Table 5 about here

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In Model 0, I modeled variance in the intercept as a function of Individual ID. As

demonstrated earlier, the ICC of individual ID = .352, and the AIC of this model is

1511. This formed the baseline comparison for the rest of the models. Model 1

assessed the significance of the control variables. The AIC of this model decreased

by 348.65 over solely accounting for nesting by individual ID, with an additional 5

degrees of freedom. The ANOVA test of fit improvement is significant at $p < .001$. Of

the control variables included, promise evaluation at T1 is significant ($\beta = .459$, $p <$

.001), suggesting some continuity of individual evaluations over time. Gender ($\beta = -$

.442, $p < .05$) and work experience ($\beta = -.018$, $p < .05$) are also significant, though

there is no significant effect for education ($\beta = .092$) or formal position in the

organization (β = -.153). Taken together this suggests that individual evaluations of an initiative are strongly predicted by that individual's previous evaluation of the same project, and that both women and more experienced individuals are likely to view projects less favorably with regards to their promise.

Model 2 assessed the significance of the formal main effects of involvement in an initiative and the initiative being in one's home subunit (project home subunit location). The AIC of this model decreased by 31.22 with 2 additional degrees of freedom. The ANOVA test of fit improvement is significant at $p < .001$. With regards to the individual predictors, involvement in a project at Time 1 is a significantly positive predictor of one's evaluation of that project's promise at Time 2 (β = .663, $p < .01$), demonstrating support for hypothesis 1. However, the project being in one's home location is not a significant predictor of promise evaluations (β = .018, $p > .05$), thus failing to support hypothesis 3. This suggests that the effect of in-group categorization by subunit seems to be primarily accounted for by the positive evaluation bias from involvement in an initiative.

Model 3 assessed the moderators of the formal main effects: specifically, the role of work experience in amplifying the involvement bias, and the role of the alter subunit network diversity in suppressing the not-invented here effect. In running Model 3 with status as an innovator as the proxy of status, the fit of the entire model improves significantly (AIK dropping to 1120, a Chi-Squared drop of 27.1 with 3 df, $p<.001$). The posited interactions however, while both in the proposed direction,

proved non-significant. Specifically, status as an innovator does not significantly moderate the relationship between involvement and promise evaluations (β = .036, p >.05), nor does alter experience diversity seem to moderate the relationship between the project being in one's home subunit and an individual's evaluation of its promise (β = -.659, p >.05).

Running the model with work experience as the proxy of status however demonstrated different results. Specifically, the AIC of this model decreases by 34.15 with 3 additional degrees of freedom. This is an improved fit over both the model without moderation, and also the model with status proxied by reputation as an innovator. The ANOVA test of fit improvement over no moderation is significant at p < .001. Model 3 demonstrates support for both moderators, and in their posited direction. Specifically, the partial interaction of involvement and work experience is positive and significant (β = .059, p <. 01) and the partial interaction of the project being in one's home subunit moderated by the location diversity of one's alters is negative and significant (β = -1.257, p < .05). In other words, the more status individuals have by virtue of their work experience, the more they will be positively disposed towards their own projects. In addition, the greater the diversity of one's peers in regards to their location across the organization, the less favorably they should be disposed to projects in their own home subunit. In sum, these models provide support for Hypothesis 2 and 4.

 I probed these interactions further using the approach of Preacher, Curran and

Bauer (2006). Specifically, I examined values of the moderating variable at which the slope of the relationship of the main effect and dependent variable was significant. I computed this region in Z-score units. For the first interaction, when Z-scores of Work Experience were greater than -.66 z (i.e., low work experience), the positive relationship between involvement and promise evaluation was statistically significant ($p < .05$). In other words, there appears to be no significant bias of involvement given work experience two-thirds of a standard deviation below the mean or lower, but this relationship becomes positive and significant (bias towards initiatives one is involved) when status accrued from work experience is higher. This lends nuance to the support for Hypothesis 2 in its suggestion that low status individuals seem to not have any significant bias towards initiatives on which they are involved.

I followed the same approach in examining the second moderation. I found that when Z-scores of Alter Subunit Location Diversity were less than -1.31 z (i.e. low network diversity), the relationship between Initiative Home Subunit Location and promise was positive and statistically significant ($p < .05$). Where Z-scores of Alter Subunit Location Diversity were greater than 1.44 z (i.e., high network diversity), the relationship between Initiative Home Subunit Location and promise was positive and statistically significant ($p < .05$). In other words, individuals who interact primarily with individuals from the same subunit seem to have a preference for initiatives from their home unit. On the other hand, individuals with greater diversity in interaction across subunit lines do not seem to demonstrate this bias

(between -1.33 Z and 1.44Z), and individuals who interact greatly across organizational lines seem to demonstrate a significant preferences for initiatives from outside their own home subunit. While this demonstrates support for Hypothesis 4, the observed findings are different than expected in showing that greater interaction across regional lines seems to not only suppress preference for in-group initiatives, but also creates preference for initiatives from the out-group.

The interactions from the formal structural moderators are plotted in Figures 6 and 7. Each moderator is plotted at one standard deviation above the mean, at the mean, and one standard deviation above the mean of the respective moderating variable (status as work experience, alter subunit location diversity). In reflecting the results from the modeled regression, each interaction is shown while controlled for all other variables from Model 3, including the other interaction. Figure 6 shows the relationship between involvement and promise at different levels of status as work experience. Figure 7 shows the relationship between initiative home subunit location and promise evaluations, at different levels of alter subunit location diversity.

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Insert Figure 6 and Figure 7 about here

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Model 4 assessed the equal-weighted informal structure main effect, specifically that one's evaluations of a projects promise at Time 2 will be predicted by the evaluations of their peers at Time 1, with equal weighting across all these individuals. The AIC of this model decreases by 39.47 with 1 additional degree of freedom. The ANOVA test of fit improvement is significant at p < .001. The main effect for equally weighted opinions of one's informational alters is positive and significant (β = .383, p < .01), thus providing support for Hypothesis 5.

Model 5 tested the informal matrix weighted by social cohesion. This model demonstrated fit improvement over Model 3, with a decrease in AIC by 56.36 over the former with 1 additional df, significant at the .001 level. This supports hypothesis 6a. In model 5 however, the effect size of the actual predictor of social influence was less than in model 4, and the improved model fit seemed to be a result of greater predictive power of the control variable of promise evaluations at Time 1. This calls into question whether individuals are really more influenced by those with whom they are cohesively tied, relative to an equal weighting of all individuals.

Model 6 tested the alternative informal structural main effect that evaluations weighted by alter awareness will have more influence than equal-weighted alter evaluations. In this model, the overall model demonstrated significant improvement of fit over Model 3 (decreased AIC by 40.11, with 1 df, p < .001). In addition, the effect size for the awareness-weighted matrix was larger than the effect size for the equal-weighted matrix. In sum, this provides support for hypothesis 6b, and

suggests that individuals seem to be more influenced by those who are more aware of the initiative in question relative to their weighting all individuals equally.

Across the last three models, the model with the greatest explanatory power was the model using alter evaluations weighted by cohesion. However, the greater explanatory power of this model was not a function of the network variable weighting by cohesion, thus calling into question whether egos are more influenced by alters with whom they are cohesively tied. Instead, the awareness-weighted matrix provided improved model fit over a non-weighted model, and holds additional explanatory power in that the coefficient for this parameter is larger than the parameter for both a non-weighted and cohesion-weighted variable. This suggests preliminarily that egos seem to be more influenced by more aware alters, seemingly providing support for accuracy concerns in social influence related to innovation.

Chapter V: Discussion

Innovation is crucial for organizations hoping to compete in a dynamic marketplace.

Research on innovation and organizational performance suggests that developing

innovation streams, or the simultaneous incremental and discontinuous innovation,

is fundamental to superior organizational performance (Gibson & Birkinshaw, 2004;

Tushman & Smith, 2002). And yet, to the extent that good ideas are not self-evident

in their emergence to the forefront of this pipeline, individuals are in the perilous

position of needing to invest resources in initiatives of ambiguous returns for the

sake of their organization's survival and flourishing (Bower, 1970; Burgelman,

1983; 1991; 1994; Noda & Bower, 1996; Henderson & Stern, 2004). The

simultaneous importance and difficulty of the process is reflected in thinking inside

organizations, where two-thirds of managers see innovation as one of their top

strategic priorities, and yet are still rarely impressed with their returns on

investment because of poor resource allocation (Boston Consulting Group, 2007). In

sum, cultivating a better understanding of the process of innovation from an

evaluation standpoint constitutes a valuable direction within the organizational

literature.

Study Summary

Much of the rigorous empirical work on idea evaluation takes place in the

psychology of idea evaluation research. This work is often about the identification of

individual traits, contexts and processes that improved the ability to select for

innovation (Basadur, Runco & Vega, 2000; Runco, 1991; Runco, 1993; Runco, 1994;

Runco & Smith, 1992; Runco & Chand, 1994; Runco & Vega, 1990; Silvia, 2008;

Groborz & Necka, 2003; Sternberg & Lubart, 1991; 1992; 1996; 2003). In a more

Darwinian view, work on the stochastic nature of creative contributions suggests

that the process is random enough to cast suspicion on the relationship between

certain skill sets and effective evaluation and identification of one's best ideas

(Simonton 1997; 1999; 2003a; 2003b; Rietzschel, Nijstad & Stroebe, 2006).

In the following model, I attempt to take seriously the work on the psychology of

idea evaluation in it's argument that the evaluation and selection are influenced by

the psychological process of judgment; and yet, I also build off the argument of

stochastic models in their suggestion that innovation is relatively ambiguous in

future valuation and thus highly susceptible to social influence. Consequently, I start

by building a heuristic of valuation relevant to the evaluation of innovation in

organizations. Then, in building from the social comparison research, I suggest that,

"the less 'physical reality' there is to validate the opinion or belief, the greater will

be the importance of the social referent, the group, and the greater will be the forces

to communicate" (Festinger 1950: 173; c.f, Pfeffer, Salancik, & Leblebici, 1976).

Consequently, I proceed by modeling the way in which the outlined psychological

process of judgment will be influenced by the contemporary organization's formal

division into project groups and subunits (FORMAL STRUCTURE), and informal

structural patterns of communication and coordination between individuals

(INFORMAL STRUCTURE). The goal of this project is thus the joint modeling of these factors in their influence on the evaluation to better understand how these systems will shape how promising specific initiatives are seen within an organization.

Promise:

The first contribution of this work is the theoretical development and empirical assessment of a comprehensive evaluation heuristic used by individuals in their assessment of innovative initiatives. Specifically, I develop the construct of 'promise,' or **a holistic evaluation of the future value to an investor (e.g. individual, group, organization) of an innovative initiative not yet developed.** I suggest that this evaluation is a function of an initiative's match to the goals and capabilities of the investor, and it's demonstration of both direct and generative return potential. I argue that this cognitive construct helps individuals understand the worth of an innovative project of ambiguous returns. Empirically, I demonstrate that the construct holds together psychologically for evaluators located across various subunits, that it holds across assessment of various projects, and additionally that it holds together across time. Further work should study this construct in other industries to test its generalizability outside of agribusiness research and development.

Control Variables:

Among the control variables, there was a significant negative relationship between

gender and promise (women evaluated projects less favorably than men), and work experience and promise (more experienced individuals evaluated projects less favorably than individuals with less experience). The significant relationship with gender is worth exploring in future work, and suggests that the modeled evaluative influences might differ depending on the gender of the evaluator.

Given that the fact that the majority of evaluations were by individuals assessing initiatives on which they were not involved, the work experience finding is consistent with the status moderation effect found in Hypothesis 4. Specifically, higher status individuals will be less favorably disposed towards projects on which they are not involved, and this will demonstrate itself in a main effect of work experience given that the target of evaluation was most often an initiative on which that individual was not involved.

Formal Structural Influences:

Given the growing tendency to divide organizations into project groups (Senge 1990; Edmondson, 2002), and the division of the large contemporary organization into autonomous subunits, I argued that two focal ways of conceiving an individual's relationship to an initiative is by their (1) direct involvement on a project (versus non-involvement) and (2) the project being within one's home subunit (versus a project being outside of one's home subunit). My first and third hypotheses deal with the role of an initiative's location across these formal structural divisions on an

individual's evaluations of that project's promise. The second and fourth hypotheses deal with the potential moderators of these formal structural main effects.

Providing support for my first hypothesis, I find that involvement in an initiative at Time 1 is positively related to one's evaluation of that initiative's promise at Time 2. This is consistent with previous work showing that individuals will need to make sense of their involvement on the initiative by seeing it more favorably, a process of sensemaking as committed interpretation (Weick, 2001). It is also consistent with the way in which evaluations tend to grow more favorable with time of involvement (Staw, 1976; Teger, 1980; Arkes & Blumer, 1985). Such cognitive and emotional attachment and the corresponding evaluation bias has been shown in various contexts of innovation, and recently in the case of the investment in entrepreneurial ventures in the venture capital industry (Guler, 2007).

My second hypothesis extends this simple effect in arguing that certain individuals will be more susceptible to a pressure towards sensemaking as committed interpretation than others, thus making them more likely to display greater favorable bias towards projects on which they are directly involved. In particular, I argued that individuals of greater status have commitments that are more public to their peers and more in line with expectations of high performance, thus increasing the pressure towards sensemaking as committed interpretation (Weick, 2001). In addition, the status of these individuals should correspond with a greater likelihood of rivalry with individuals involved on other promising projects, as their success

90

might threaten the focal individual's status as an innovator. Given how rivalry leads to project devaluation (Menon, Thompson, & Choi, 2000), I argued that individuals of high status should also view innovative projects on which they are not involved as less promising.

I find support for this hypothesis as outlined, though the effect demonstrates itself with the diffuse status cue of work experience, but not with the specific status cue of innovator reputation amongst one's peers. The lack of support for the posited interaction with reputation as an innovator could be a function of an individual's status as an innovator also corresponding with an ability to evaluate innovation more effectively. Thus, even if it leads to increased pressure, this 'bias' would be canceled by this person's improved ability to actually evaluate innovation effective. The relationship between status and ability is plausible given research on transitive memory showing how an individual's accuracy in assessment of expertise is related to joint training (Moreland, 1999), and improves with increased time of interaction (Hollenbeck et al., 1995; Liang, Moreland, & Argote, 1995), activities likely in the organizational setting. In addition, this is supported by work on status characteristics that shows how assessments of status (e.g. status as an innovator) will correspond to task relevant behavior (e.g. actual ability to evaluate innovation) in decentralized, longer-tenured settings (Bunderson, 2003). The significance of the interaction with status as work experience however suggests that the increased sensemaking as committed interpretation should manifest itself in evaluation bias when such status is not plausibly related to improved innovation evaluation ability.

The simple slope test of the interaction shows an interesting relationship between involvement bias and promise evaluations when examined at different levels of status as work experience. Specifically, individuals with less work experience do not show a preference towards initiatives on which they are involved. Such involvement-shaped bias however manifests itself with more experienced individuals in the organization. When examined visually, individuals with the least amount of work experience seem to be least biased against initiatives on which they are not involved, and least biased towards initiatives on which they are involved. While the amplification of an involvement bias by greater experience was expected, my theory does not suggest that individuals of low experience would have little to no bias against the initiatives on which they are involved.

My third hypothesis is that individuals will be more positively predisposed towards projects in their own home subunit, and biased against projects from other unit. This builds off of work on the non-invented here syndrome (Katz & Allen, 1982) and the assumption of a positive in-group bias (Sherif, 1966; Tajfel, 1970; Tajfel, 1981). Given the positive correlation between project being in one's home unit and promise evaluations, it appeared that such an effect would exist. However, when modeled simultaneously with formal initiative involvement, I find this effect to be non-significant. In other words, driving the initially apparent NIH syndrome for this organization was in fact the involvement bias. This adds to a growing literature suggesting that organizational reality often contradicts the assumptions of the Not-Invented-Here syndrome, because of the potential positive implications of learning

from outsiders, the greater scrutiny applied to insider initiatives (Menon & Pfeffer, 2003), and the rivalry dynamics that often emerge internal to one subunit (Menon, Thompson & Choi, 2006). Tsai (2002) helpfully makes the point that the multi-unit organization involves a more complex story than competition with outsiders or coordination with insiders, one best characterized by the notion of 'coopetition.' The results of this study suggest that similar dynamics will play out internal to one unit, thus making one's allegiance primarily to their own projects, over and above initiatives from one's home region.

In the fourth hypothesis I argued that greater interaction with employees spread across different subunits of the organization should serve to minimize the bias towards initiatives of one's subunit, and against initiatives from outside one's subunit. I argued that this type of interaction might results in individual's melding the identifies of those with whom they communicate into a more holistic understanding of the organization (Ashforth, 2007; Sluss & Ashforth, 2008), thus helping them to see the organization as a whole rather than an entity divided along subunit lines. I do find support for this effect, showing that alter subunit location diversity negatively moderates the relationship between the project being in one's home group and their evaluation of its promise. This adds to a growing body of literature of the benefits of network diversity for decision-making effectiveness (Beckman & Haunschild, 2002; Williams & O'Reilly, 1998).

The simple slope analysis for interaction however demonstrates an interesting and unexpected finding. In particular, while the results support the hypothesis that the relationship will be less strong for individuals with more interaction across subunits in the organization, the overall finding is oriented differently than expected. Specifically, I find that individuals with little diversity of interaction across subunit lines demonstrate preference towards initiatives of their own subunit. Individuals with average interaction across subunit lines seem to demonstrate very little preference either for or against initiatives within their subunit, thus lying in support for an argument for the role of diversity in suppressing bias (Beckman & Haunschild, 2002). However, somewhat unexpectedly, those with the greatest diversity of interaction across subunit lines not only have a suppressed preference towards initiatives from their own subunit, they additionally demonstrate a significant bias *towards* initiatives from other subunits over and against their home subunit initiatives.

This finding lies in congruence with the work of Menon, Thompson and Choi (2006) in their suggestion that individuals might sometimes prize innovation from outside their in-group. In this work, I outline the role of network diversity in shaping this effect, and specifically argue for the way it shifts an individual's identification with the organization as a whole rather than one specific subunit. However, this resulting evaluative preference for initiatives from other subunits suggests that greater network diversity is not always a complete gain. In other words, while some network diversity is likely to improve decision-making by decreasing in-group bias

94

(Beckman & Haunschild, 2002), with enough diversity of interaction, it is also possible that one's identity will shift so much as to lead to an alternative set of problems in the evaluation of innovation. Specifically, to the extent that individual preferences influence their investment in home initiatives, a preference for initiatives from other subunits might prevent individuals from investing in initiatives in their closest vicinity, curtailing their development by those most able to participate in the process. This suggests that an organization more networked across subunits may not be an organization without silos, but rather one filled with individuals who seemingly prefer projects in ways contrary to what we would expect from a simple not-invented-here syndrome.

Informal Structural Influences:

The story told up to this point is one in which individual evaluations of innovation's promise are influenced by the way they are related to these projects by virtue of the formal structuring of the organization. In other words, the evaluation of innovative initiatives of ambiguous return is not solely a function of the characteristics of the initiative itself, but also shaped by the way the organization is structured within some social space. In addition, the influence of the formal structure is contingent on certain characteristics of the individual, and their work experience and interaction with individuals across the organization will serve to suppress or amplify the bias of innovation evaluation. And yet, while the formal structural division of an organization will clearly influence evaluation, it is quite likely as well that informal

structure, or patterns of social interaction and the transfer of information across those individual, should also influence judgment. In fact, Ibarra and Andrews (1993) argue that empirically such interactions might matter more insomuch as:

> Informal interaction networks, in channeling social influences as well as control of valued resources, have a significant impact on job-related perceptions, over and above the effects of traditionally emphasized sources of influence such as formal position and departmental affiliation (p. 296).

In this project, I argue that interaction with other individuals will shape that individuals initiative evaluations by way of social influence given (1) the ambiguity of innovation's future value, and (2) the way in which ambiguity leads people to look to the opinions of others in absence of objective cues.

In this project, I find support for Hypothesis 5 that an individual's promise evaluations of innovative initiatives will be significantly influenced by the promise evaluations of those they go to for information. Specifically, an equal weighting of the evaluations of those one goes to for work-related information significantly predicts one's down-stream evaluation of an innovation. This is the case even when controlling for one's own evaluation at Time 1, and also the formal structural antecedents of evaluation modeled earlier. In sum, this work lies in support of network social influence paradigm (Friedkin, 1998; 2001) in showing how individual attitudes are a function of both exogenous factors—in this case formal

structural antecedents—and endogenous influence—in this case, the evaluations of one's peers.

That these findings differ from the previous organizational literature which does not find a strong social influence effect (e.g. Ibarra & Andrews, 1993; Rice & Aydin, 1991) can be explained by the fact that the objects of evaluation here are more ambiguous, and relevant information about such initiatives is also distributed across a social space. The former point has been addressed at length in this project, so the underlying assumption of innovation ambiguity and its consequence for social influence need not be repeated here. The latter point is that individuals might be more likely to look to their peers and thus be influenced by such opinions when not all individuals have equally relevant information about object of evaluation. Ibarra and Andrews' (1993) work looks at individual' attitudes about organizational risk taking, acceptance, information access, interdepartmental conflict, and autonomy. In these cases, 'expertise' of judgment should be significantly less distributed when compared to knowledge about the value of a specific innovation because most people might feel they are entitled to a valid opinion about those specific organizational attitudes.

By testing this hypothesis with panel data, I am able to better make the case that this effect is social influence as opposed to alternative explanations to social influence. For example, if the peer selection were driving the effect, I would not expect any empirical correlation between alter's evaluations and downstream ego evaluation,

as the only predicted empirical effect from peer homophily would be observed network autocorrelation at any specific period in time. In addition, this study also stands in contrast to the argument that networks are but a proxy of exposure to similar stimuli in the environment. This specific alternative explanation is made less plausible in this study by my testing of network effects together with formal organizational structure, and also because of the testing using longitudinal data. With regards to the first explanation, I would expect exposure to similar stimuli to be moderately captured by the formal structural variables included in this model. Consequently, if exposure to similar stimuli were driving the effect, this would be captured by the formal structure variables, and the informal structure would be non-significant. In this data, I find that both formal and informal structure seem to influence individual evaluations. In addition, given a lagged test of these hypotheses, I show how the evaluations of one's peers at Time 1 correlate with an individual's downstream evaluation at Time 2. If exposure to similar stimuli between T1 and T2 were to be driving this effect, I would only expect network autocorrelation amongst everyone's evaluations at Time 2, a sign of these individuals moved in the same direction as a result of this exposure. This is especially true when additionally controlling for the dependent variable at time 1, the strongest case of controlling for all other selection effects (Hainey & Osgood, 2005).

In testing hypotheses 6a and 6b, I show that 'all men are not created equally' with regards to their evaluative influence. Specifically, I find that alter evaluations weighted by initiative awareness seemingly have more influence than equal-

98

weighted alter evaluations (H6b). The finding suggests that individuals might more strongly weigh the evaluations of those who they think have more relevant information about the initiative in question, that these individuals are potentially more expressive with their views, or that the ego is attuned to more relevant information in so much as they are concerned with accuracy of evaluation.

In addition, while I find cohesion-weighted evaluations to influence an ego's downstream evaluation, I do not find greater influence for the cohesion-weighted parameter over either an equal-weighted or an awareness-weighted parameter, even though it demonstrates the greatest model fit. The failure to find a greater explanatory power for the cohesion-weighted evaluations is curious given my argument that cohesion should lead to greater sharing of information, greater trust, and consequently greater influence. Nevertheless, this non-significance does not necessarily contradict the argument that trust makes the information one brings more influential (Ferrin, Dirks & Shaw, 2006), but rather indicates that individuals might not trust alters generally based on their social structure in the organization, and instead differentiate their trust based on the individuals relationship to the object of evaluation. In other words, while trust might still matter for influence on evaluations, it seems be a more nuanced form of trust in operation, as in the trust of one's opinion as a useful source of information on this project. This is plausible given the greater explanatory power of evaluations weighted by initiative awareness. Such nuance is reflected in the reflections of individuals in the organization, such as, "I most trust those who are knowledgeable about the project",

"I particularly distrust anyone until I understand the fundamentals on which every project is valued," and "I trust someone who displays objectivity (where) the objectiveness factor includes the amount of information that is communicated about the project." Further empirical work should continue to investigate the nuance by which individuals trust and are consequentially influenced in their evaluation of innovative initiatives.

Limitations:

This study is not without limitations. First, although the study's location in the field extends much of the laboratory work on evaluation in the psychology of idea evaluation literature, the finding's generalizability are limited in being applied to one specific organization in one specific industry. Though there are reasons to believe the promise construct functions outside of this specific industry (by keeping the 'goals,' 'capabilities' and 'outcomes' more ambiguous in measurement), empirically I can only demonstrate construct validity in one environment. With regards to the generalizability of the structural influence, I cannot control for ways in which higher order organizational or industry dynamics might influence the structural influences on evaluation in this context. For example, given that the focal organization of the study was pushing for greater 'integration' across decentralization, it is plausible that their employees were more likely to positively evaluate ideas from other regions because of this culture, thus accounting for the lack of a "Not Invented Here" syndrome observed. Future research should extend

the promise construct to other industries, and additionally examine ways in which

the structural antecedents of evaluation might be shaped by higher order nesting by

organizational or industry factors.

Second, the study is limited in failing to identify 'accuracy' of these judgments, and

instead labeling 'bias' as a deviation from the average of raters across the

organization. Consequently, if an individual were to accurately identify the 'promise'

of an initiative that others in the organization did not, this would incorrectly be

labeled as an evaluation bias. To address 'accuracy' of judgment, the study would

have to have to measure the alignment of promise judgments with downstream

direct and generative return of these initiatives. Given the size limitations of the

current data set, this approach was not attempted as drawing conclusions about the

'true value' of innovation based on the downstream return of 12 projects would be

both statistically limited and conceptually misguided, especially to the extent that

there is a 'fixed degree of randomness' in terms of which initiative end up

generating downstream performance (Simonton, 2003a). Further work should

attempt to make more precise statements about decision accuracy, perhaps by

greatly increasing the number of projects evaluated.[14]

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[14] To the extent that randomness or return is normally distributed (some projects
will perform better on the market than their true value, and some worse), though
imperfect statistically examining a greater number of initiatives should facilitate an
ability to make statistically accurate statements about what is 'bias' when observed
in the aggregate.

Nevertheless, while I am hesitant to label bias without knowing the true value of a project, the structure of the analysis does lend credence to an attribution of bias, as addressed in the operationalization of bias section earlier. Specifically, the fact that there are systematic slope differences in valuation on the same project based on one's relative location to the initiative does suggest that characteristics not at all related to the actual value of an initiative (involvement, being in one's home subunit, status and diversity of interaction across the organization) will shape an individual's understanding of an initiative's promise. So, while we do not know whether one is positively or negatively biased toward a project relative to some objective true value, we do know that one's proximity and involvement in a project, in addition to their status and interaction across the organization, will systematically and irrationally shape one's understanding of a project's true value. Consequently, I suggest it is fair to understand this as a form of bias, even if it's true directional effect (positive or negative) remains unaddressed.

Finally, this project is limited in failing to link evaluation to behavior such as selection decisions or attempts at collaboration. In other words, we do not know if projects identified as promising are more likely to facilitate initiated collaboration, or whether they are likely to be selected for further funding in the organization. That being said, I would argue that one of the primary conceptual benefits of this project is exactly the fact that I look at evaluation prior to selection, and do not therefore assume that selection behavior implies positive evaluation. The latter assumption is clearly not the case in organizations, as demonstrated by Henderson

and Stern's (2004) work showing that, "internal selection decisions were increasingly colored by politics as the winners of earlier resource battles gradually skewed selection criteria away from market-driven realities toward the preservation of their political power" (2004: 70). An important limitation of evolutionary change models of variation, selection and retention (e.g. Aldrich, 1999) is their inability to conclude whether people or organizations actually see that which they select for as especially valuable (an evaluation bias) or whether they push such initiatives forward regardless of their sense that they are especially promising. By measuring behavior without intent, I would suggest that we know decidedly less about the mechanisms underlying selection behavior in organizations and markets.

As such, despite the clear limitation of this project in examining evaluation without behavior, I would suggest that maintaining a distinction between evaluation and selection in future work is important in that such distinctions will shape the prescriptive implications how to improve innovation selection behavior across an organization. For example, if individuals often accurately evaluate the promise of specific projects but do not act on their intuitions, the implication would be to adjust the organization's culture, incentives, or structures as to facilitate a closer link between evaluation and selection. If, however, selection is already tightly coupled to evaluation, but evaluation is in fact skewed, the implication would be to find ways to improve the accuracy of evaluation for individuals-- perhaps by creating a moderate

level of diversity in one's social networks, or by putting decision-making in the

hands of people will less work experience as status.

Conclusions:

Innovation is at the center of competition in a dynamic market. Because

organizations operate with some degree of resource scarcity, it is imperative that

they develop a high degree of efficiency in their innovation processes. While this

efficiency can come through by developing a larger number of 'good' ideas, the

production of good ideas alone does not mean that these ideas will garner the

appropriate resources for effective development and implementation. Theoretically,

it is conceivable that an organization could develop all the 'right' ideas, while

continuing to select for the wrong ones. This makes the production of good ideas a

necessary but insufficient cause of successful innovation. As Pixar CEO Ed Catmull

suggests, finding good ideas is akin to, "an archaeological dig where you don't know

what you're looking for or whether you will even find anything " (2008: p. 66). In

this project, I explicate this process of idea evaluation in showing how individuals

view the promise of organizational initiatives, and also how such evaluations will be

shaped by the structure of the contemporary organization.

From a pragmatic standpoint, this research highlights several managerial

implications. First, I suggest that those who are most 'trustworthy' with regards to

the value of innovation may not be the most senior individuals in the organization,

as these employees might be in fact more biased towards their own projects and against innovation projects on which they are not directly involved. Consequently, decision-making about what projects to pursue might not be best left to more experienced individuals, but perhaps instead be effectively delegated out by metrics less likely to result in evaluation bias (perhaps even one's status as an innovator as this does not significantly amplify involvement bias as does status as work experience).

Second, this work adds to a growing body of literature on the benefit interacting with a diverse network of individuals given the differences of information and perspectives they bring (Williams & O'Reilly, 1998; Beckhman & Haunschild, 2002). And yet, it further extends this work in suggesting there might be a point at which increased interaction across the organization is detrimental for evaluation, a point where increased diversity might in fact lead individuals to overvalue projects outside their organizational subunit at the expense of those initiatives inside their subunit. Specifically, I show that interacting with individuals from across the organization is likely to decrease in-group bias in project evaluation; however, I also show how individuals with an especially high levels of network diversity are likely to demonstrate bias towards initiatives from outside one's home unit. Consequently, it is important that managers find ways for their employees to build social connections across the organization. Thus, given significant autonomy for individuals to work on projects of their own choosing (e.g. Google model), such interaction patterns might prevent the all too common occurrence of

decentralization becoming another form of isolation, and thus stand to realize greater potential of more open-source forms of organization (Pisano & Verganti, 2008). Nevertheless, it is also important for managers to realize that an *overly* networked organization might not demolish silos in the organization, but rather provide a new set of problems in making individuals potentially prefer and invest in innovation from the outside their subunit as opposed to that already in development within their organizational home.

Finally, the findings on social influence highlight ways in that managers might work to expose individuals to those with different opinions of projects. Given the fact that individuals seem to consider an alter's informational relevance over social cohesion more generally, managers might want to find ways to facilitate exposure to a wide range of opinions insomuch as individuals seem to be are more or less capable of discerning between what information is worth trusting. In addition, given how we know that interacting with similar others not only facilitates a convergence of opinions, but also their amplification (Glaeser & Sunstein, 2007), it is important that organizations continue to cultivate an environment where dissenting voices are not suppressed but instead find space for expression.

In conclusion, I believe this project demonstrates the validity of looking at promise as a lens for understanding how individuals assess the value of innovation in a complex, ambiguous marketplace. In addition, I hope that the outlined theoretical model and corresponding empirical support begins to address the ways in which the

formal and informal structures of the contemporary organization will shape the

evaluation of innovation in development within that system. I hope this work spurs

further interest in research on innovation evaluation, and I hope that I have

effectively argued that one cannot assume that it is *only* the generation of ideas that

will necessarily lead to innovation in practice, but that this process is also

dependent on effectiveness of evaluation. In sum, I believe this research shows how

individual's evaluations of innovation are socially constructed in somewhat

predictable ways; consequently, the more managers can understand these

processes, the more likely they will be to avoid the pitfalls inherent in the search for

the next big thing.

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Tables

TABLE 1: Comparison of Three Approaches in Idea Evaluation Research

	Individual Influence	Process Influences	Context Influences
Motivating Concern	What is the relationship between individual characteristics and evaluative bias and skill?	How do characteristics of the evaluation process (timing, framing, idea type evaluated) influence individual evaluations?	How does the context of evaluation (e.g. industry) influence the criteria used in evaluation?
Concept of Idea Evaluation	Process of identifying the characteristics of an idea that are related to future success.	Process of identifying the characteristics of an idea that are related to future success, where this evaluation is contingent on the process of evaluation	Matching of ideas to specific criterion thought to lead to success in the marketplace
Dominant IV	- Divergent thinking - Analytic Skill - Cognitive Control - Training	<u>Framing Influences</u> - Innovation Framing - Implementation Framing <u>Evaluation Type:</u> - Inter-personal - Intra-personal <u>Timing Influences</u> - Preference for judgment delay - Others?	<u>(A) Context (time/ training):</u> - Field - Organization <u>(B) Evaluative Criteria</u>
Dominant DV	Accuracy of input and outcome forecasts	Accuracy of input analysis Idea revision quality	(A) Evaluative schema (B) Decision (correlated with schema)
Findings	Individuals have an ability to determine characteristics of ideas, and are biased in this process in systematic ways.	The framing of the decision (towards innovative or implementation standards) matters for forecast of the idea and its revision Individuals evaluate their ideas and the ideas of others in systematically different ways. Judgment delay allows for the collection of more information, with mixed impact on effectiveness	(A) Training and time in the field predicts and shapes convergence on shared norms (B) Predictive criterion of judgment varies by industry
Methods	Laboratory Field Analysis (scientific hit-rate)	Laboratory Field Analysis (for temporal dynamics)	Field Analysis- Criterion Analysis

Note: When using letters to designate approaches ((A) & (B)), this implies a link across categories. For example, a dependent variable labeled (A) would correspond to an independent variable labeled (A).

TABLE 2: Selected Idea Evaluation Studies

Article	Context	Method	Independent Variable	Evaluative Measure	Individual Analysis	Process Analysis	Context Analysis	Findings
Basadur, Runco & Vega (2000)	Product evaluation of managers in large international consumer good manufacturer	Survey	Preference for avoiding judgement, ideational skill	Rating of originality of own ideas, counting number of original ideas correctly identified with original and non-original ideas	X	X		Preference for avoiding judgment is positively related to evaluative skill with non-original ideas, negatively related with original ideas. Preference for divergence is also related to evaluative skill, as mediated by ideational skill.
Blair & Mumford (2007)	Undergraduate evaluation of generated ideas for foundation funding	Lab	Judgement time pressure	Preference (choose between pairs of ideas) and choice measures (select best among group)		X	X	People preferred ideas that were easy to understanding, consistent with social norms, and consequently avoided risky and original ideas. The latter set of ideas was preferred given added time pressure.
Christiaans (2002)	Design students and teachers acting as raters for a series of final projects for a design class	Survey	Expertise differences (experts, non-experts, people with intermediate experience)	Level of agreement within groups of judges			X	No major differences in agreement of judges and non-judges, though increasing with more homogenous pool. More agreement is found when shared understanding of what is creative.
Dailey & Mumford (2006)	Undergraduate evaluation of case study solutions policy from education and public policy domain	Lab	Decision framing (innovation v. implementation standards)	Accuracy of forecasted resource requirements and project consequences		X		People were more accurate in forecasts when thinking in terms of implementation intententions, and poorly forecasted when familiar with the issue
Groborz & Necka (2003)	Undergraduate evaluation of ideas generated by the group for real world and non-real world tasks	Lab	Cognitive control (Navon and Stroop task)	Generation Evaluation task with focus was on correctly identifying the originality of ideas		X		Cognitive control facilitated more accurate evaluation of others ideas, but only when demonstrating a global cognitive style of information processing.
Hallen & Eisenhardt (2008)	Qualitative study of entrepreneurial relationship formation with venture sources	Field- Qual	Catalyzing strategies (causal date delay, proofprint progress, create credible alternatives, scrutinizing interst)	Relationship success measured as the formation of a Entrepreneur- Intester relationship when interest in venture is high		X		Informal meeting with potential partners before relationship formation (causal dating) is a predictor of successful relationship formation
Horng & Lin (2009)	Quantitative analysis of culinary creativity in field	Scale Development					X	Developed the following scale for the evaluation of creative dishes in the culinary industry (aroma, taste, and texture; color; modeling and arrangement; garnish; dishware; handling of ingredients; and overall assessmentt), demonstrating strong inter-rater reliability
Kozbelt (2007)	Analysis of Beethoven's self-critical responses and their relationship to critical response	Case Study	Bethooven's self-discerning responses (coded positive or negative)	Crical Response to composition	X			Beethoven's self-discernment was significantly related to audience critical response, and this ability improved over time
Lonergan, Scott & Mumford (2004)	Undergraduate evaluation and revision of advertising campaign plans	Lab	Primed innovation v. implementation standrads to judgement	Redevelopment of ideas in evaluation, rated by independent judges		X		Better revision for advertising campaigns were obtained when innovative, criteria were applied to less original ideas and when implementation efficiency criteria were applied to more original ideas
Rietzschel, Nijstad & Stroebe (2006)	Group generation, evaluation and selection of ideas in brainstorming on how to improve the university Psychology Department	Lab	Nominal versus interactive brainstorming in groups	Ability to select for their best ideas as evaluated by independent raters	X	X		No difference across groups in selecting for ideas, and the odds of selecting their best ideas was no better than chance
Runco & Basadur (1993)	Analysis of the evaluation skills of managers and their response to training	Field	Training with Basadur (1994) training task	Accuracy in intrapersonal evaluation by correctly identifying the number of original ideas developed	X	X		Training improved individual accuracy in ability to correctly identify the number of unique ideas they developed
Runco & Chand (1994)	Individual evaluation of generated divergence in real world problems solutions	Lab	Ideation Skill	Ability to correctly identify the 1) high rated and unique ideas, 2) moderate ranked popular ideas, and 3) low ranked popular ideas	X			Intrapersonal evaluation accuracy is correlated with ideational skill
Runco & Smith (1992)	Comparison of intra- and inter-personal evaluation skill of university students on non-real world tasks	Lab	Inter-personal versus Intra-personal evaluation task, Divergent thinking skill	Accuracy of identifying the rated novelty and popularity (non-novelty) of various ideas	X	X		Intra-personal evaluation (but not interpersonal) accuracy is related to divergent thinking. Individuals are more accurate when evaluating the uniqueness of their own ideas then their popularity, but more accurate rating others idea for their popularity than their uniqueness.
Shepherd (1999)	Venture capital assessments and the relationship of criterion to decision	Survey	Venture characteristics (key success factor stability, timing of entry, lead time, competitive rivaly, educational capability, industry related comperence)	Assessment of venture probability of survival			X	Venture capitalists assessments of venture survival are driven by the level of uncertainty, and the ability of management to minimize risk and deal with changes in the external environment.
Silvia (2008)	Student evaluation of own divergent thinking taks for non-real world task	Lab	Openness to experience	Convergence of evaluation of idea creativity (agreement of self-assessment of ideas with the outside raters of the ideas)	X			Individuals are relatively able to evaluate and select their best ideas, and this ability was stronger for those high in openness to experience
Simonton (1997)	Analysis of patterns of scientific publication and achievement over time	Archival	Time in career	Ratio of high-impact work to total output	X			Ratio of high-impact work to total output remains constant across scientific careers, a phenomena known as the equal-odds ratio.

122

TABLE 3: Model Hypotheses

H1: Individual involvement in an initiative is positively related to an individual's evaluation of that initiative's promise.

H2: Individual status moderates the relationship between involvement and promise; specifically, the relationship between involvement and promise will be stronger (i.e., more positive) when status is high than when it is low.

H3: Initiatives from one's formal organizational subunit will be seen as more promising than initiative's from outside of one's formal organizational subunit.

H4: The subunit location diversity of one's alters moderates the relationship between the subunit location of an initiative and individual's evaluations of its promise; specifically, the relationship between project home subunit location and promise will be weaker (i.e., less positive) when they communicate with individuals from a more rather than less diverse set of subunit locations.

H5: An ego's evaluation of an initiative's promise is positively related to the aggregate promise evaluations of those individuals to whom he or she goes for information.

H6a: An ego's evaluation of an initiative's promise is positively related to the aggregate promise evaluations of those individuals to whom he or she goes for information when alter opinions are weighted by their social cohesion with ego.

H6b: An ego's evaluation of an initiative's promise is positively related to the aggregate promise evaluations of those individuals to whom he or she goes for information when alter opinions are weighted by their project awareness.

TABLE 4: Descriptive Statistics and Correlations

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13
1-Promise (Time 2)	5.15	1.12	1.00												
2-Involvement	5.17	0.26	0.28***	1.00											
3-Initiative Home Subunit Location	0.24	0.43	0.14***	0.43***	1.00										
4-Innovator Status	3.98	4.21	0.10**	0.18***	0.02	1.00									
5-Work Experience	16.70	10.40	-0.24***	-0.03	-0.01	0.02	1.00								
6-Alter Subunit Location Diversity	0.31	0.23	0.05*	0.12***	-0.04	0.32***	0.22***	1.00							
7-Alter Equal Promise Evaluations T1	5.11	0.53	0.31***	0.07^	0.06	-0.11**	-0.09*	0.07^	1.00						
8-Alter Awareness Weighted Promise Evaluations T1	5.09	0.52	0.31***	0.08^	0.10**	-0.05	-0.08*	0.13***	0.95***	1.00					
9-Alter Cohesion Weighted Promise Evaluations T1	5.23	0.54	0.29***	0.07^	0.06	-0.10*	-0.09*	0.07^	0.97***	0.91***	1.00				
10-Promise (Time 1)	5.17	1.05	0.5***	0.19***	0.11**	-0.01	-0.18***	0.10**	0.36***	0.35***	0.38***	1.00			
11-Gender	1.44	0.50	-0.16***	-0.19***	0.00	-0.37***	-0.33***	-0.23***	0.02	0.03	-0.05	-0.01	1.00		
12-Education	2.04	1.23	0.02	0.07^	0.02	0.26***	0.28***	0.36***	-0.01	0.03	-0.01	-0.07	-0.29***	1.00	
13- Formal Organizational Position	1.38	0.60	0.01	0.16***	-0.01	0.24***	0.26***	0.41***	-0.03	-0.02	-0.03	0.00	-0.42***	0.51***	1.00

*** <.001, ** <.001, * <.05, ^ <.10

TABLE 5: Random Coefficient Regression Results (with status measured as work experience)

			Nesting	Controls	Formal Main Effects	Formal Moderators	Informal–Equal Weighting	Informal–Cohesion Weighting	Informal–Awareness Weighting
		Model	0	1	2	3	4	5	6
Nesting									
	Individuals		ICC ~ .352						
Controls									
	Promise T1			.459 (.044) ***	.408(.046) ***	.391 (.047) ***	.310 (.050) ***	.315 (.050) ***	.310 (.049) ***
	Work Exp			-.018 (.007) *	-.017 (.008) *	-.017 (.008) *	-.021 (.007) **	-.022 (.007) **	-.021 (.007) **
	Gender			-.442 (.15) **	-.371 (.158) *	-.296 (.153) ^	-.239 (.143) ^	-.197 (.115)	-.239 (.143) ^
	Education			.092 (.063)	.095 (.064)	.124 (.064)	.061 (.065)	.055 (.066)	.056 (.065)
	Formal Org Position			-.153 (.138)	-.188 (.102)	-.201 (.133)	-.045 (.138)	-.025 (.138)	-.037 (.138)
	Alter Subunit Location Diversity					.097 (.385)	.012 (.360)	-.015 (.363)	-.060 (.361)
Formal Main Effects									
	Involvement				.663 (.167) ***	-.073 (.333)	.004 (.326)	.004 (.333)	-.011 (.326)
	Initiative Home Subunit Location				.018 (.102)	.395 (.189) *	.352 (.188) ^	.344 (.197) ^	.327 (.188) ^
Formal Moderators									
	Involvement * Work Exp.					.059 (.020) **	.055 (.020) **	.055 (.020) **	.056 (.020) **
	Initiative Home Subunit * Alter Subunit Location Diversity					-1.257 (.521) *	-1.140 (.536) *	-.142 (.553) *	-1.116 (.536) *
Informal Main Effects									
	Equal Weighting of Alter's Evaluations T1						.383 (.091) ***		
Informal Moderators									
	Weighting of Alter's Evals * Cohesion T1								.354 (.091) ***	
	Weighting of Alter's Evals * Awareness T1									.389 (.092) ***
AIC				1511	1170	1141	1113	1076	1059	1075
ANOVA MODEL				348.5 (5 df)***	31.2 (2 df)***	34.2 (3 df)***	39.5 (1 df)***	56.4 (1 df)***	40.1 (1 df)***
^ p <.10. * p < .05, ** p < .01, *** p < .001									

Figures

FIGURE 1: Idea Evaluation and Effectiveness
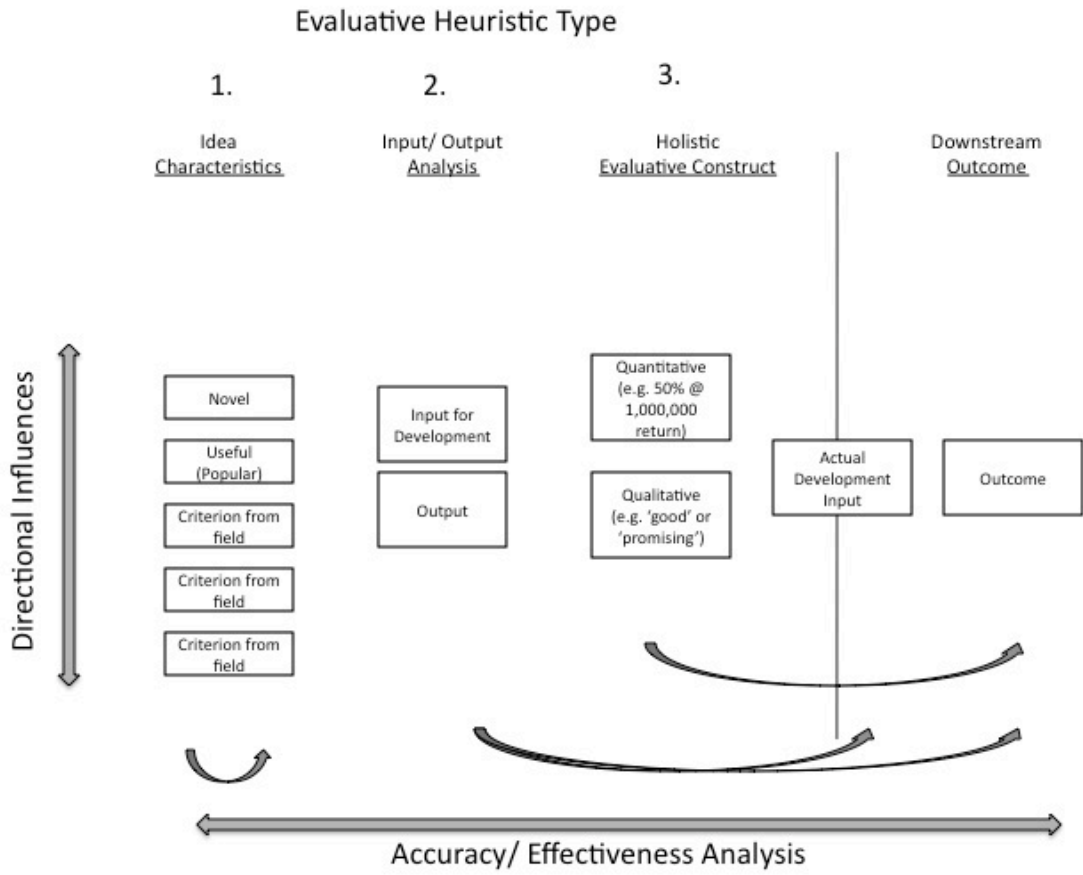
FIGURE 2: Structuring of the Contemporary Organization

INFORMAL NETWORK/ STRUCTURE
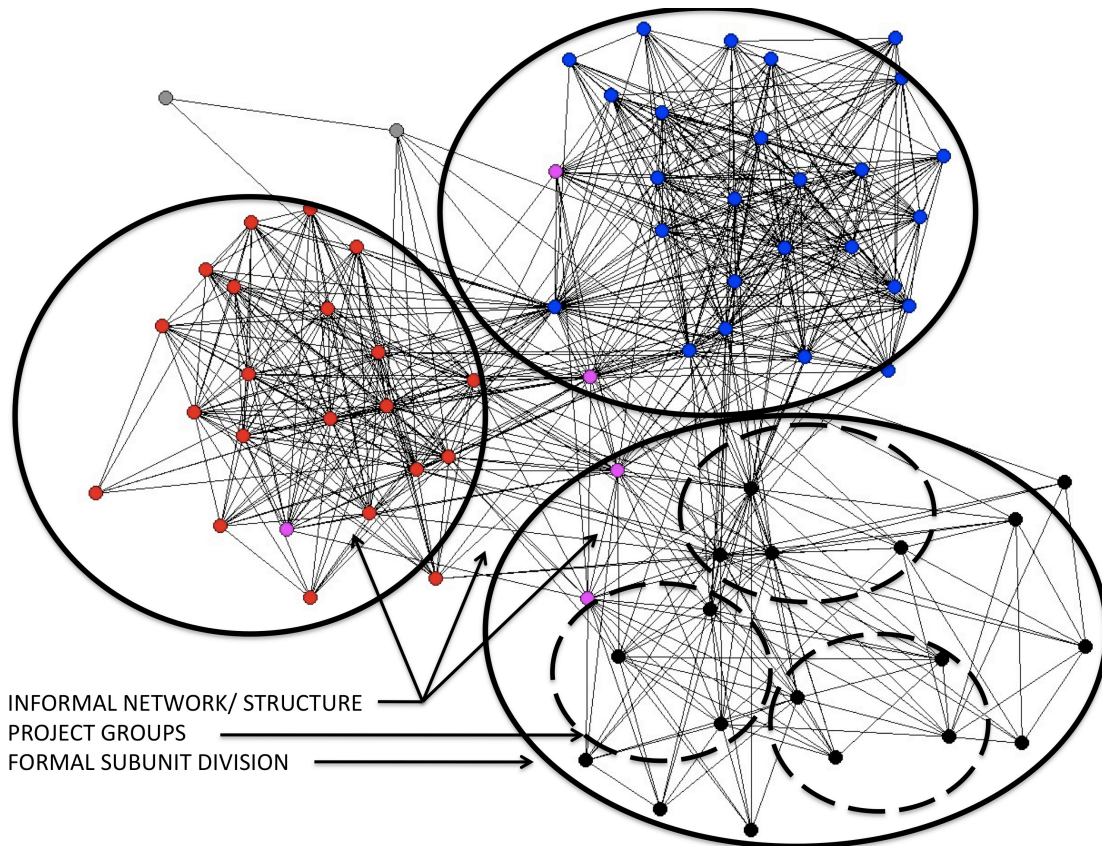
PROJECT GROUPS

FORMAL SUBUNIT DIVISION

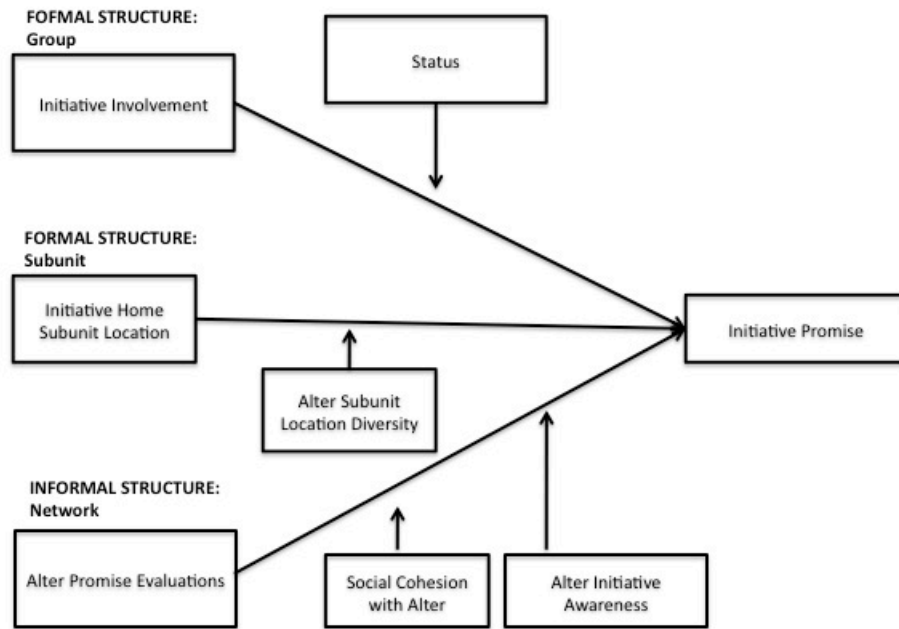FIGURE 3: Social Influence Model of Innovation Evaluation

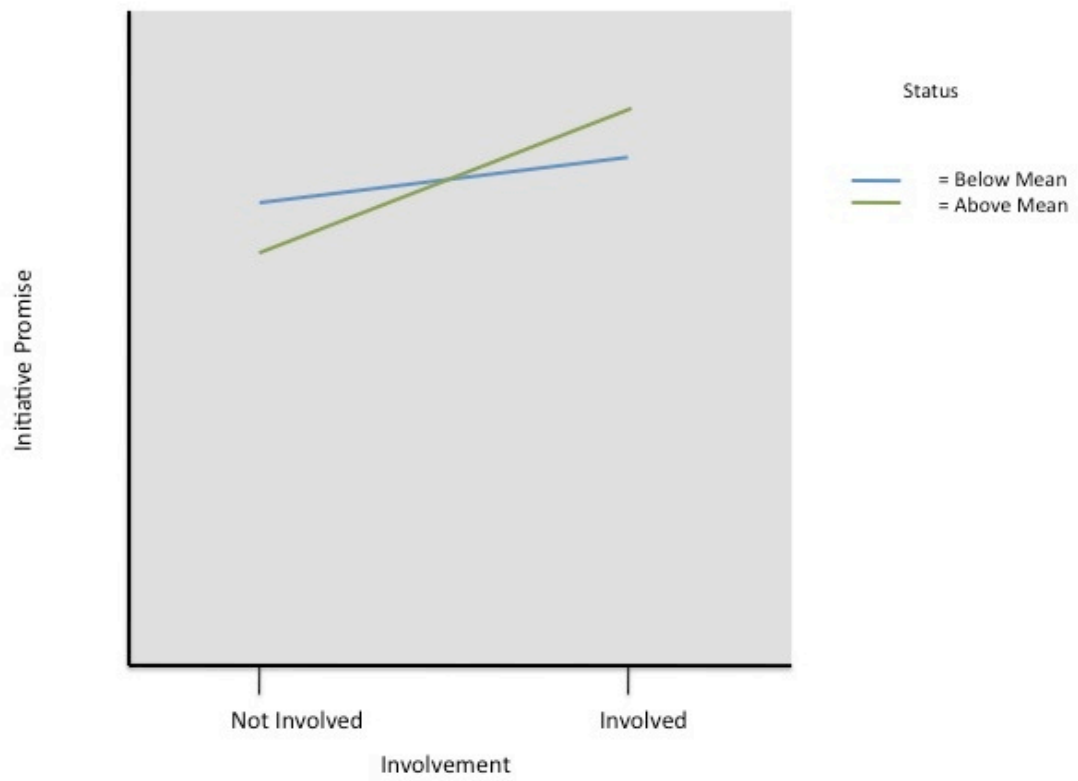FIGURE 4: Predicted Interaction of Involvement and Work Experience

FIGURE 5: Predicted Interaction of Initiative Home Subunit Location and Alter's Subunit Location Diversity
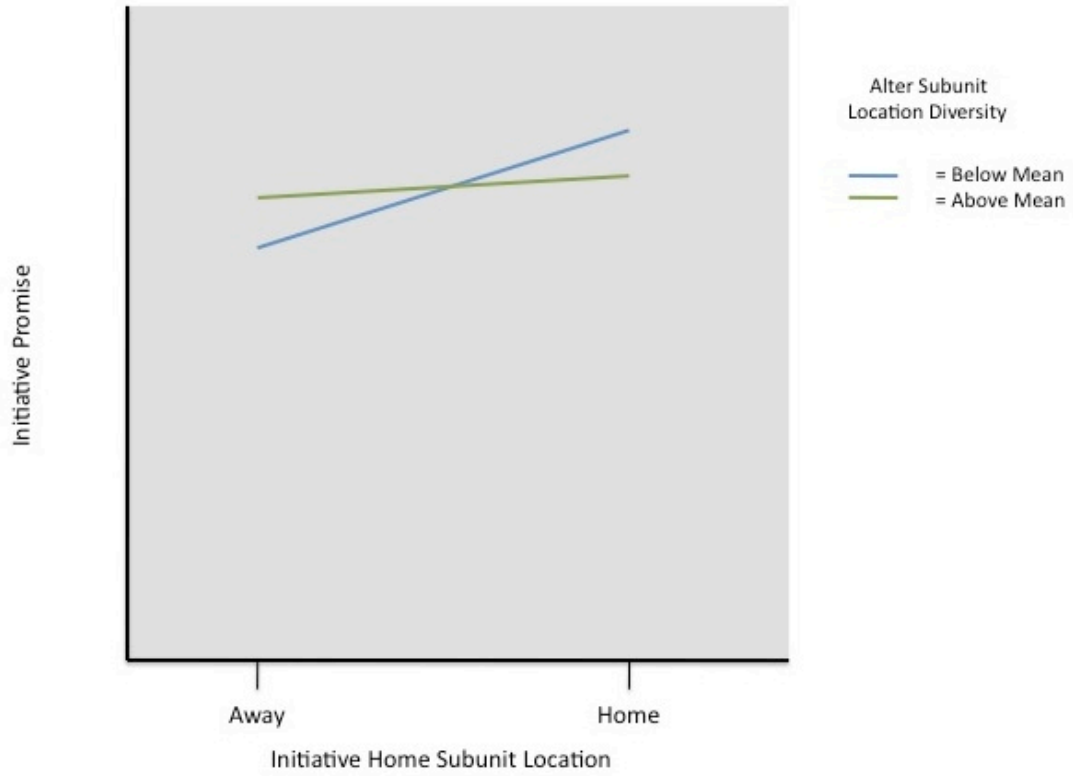
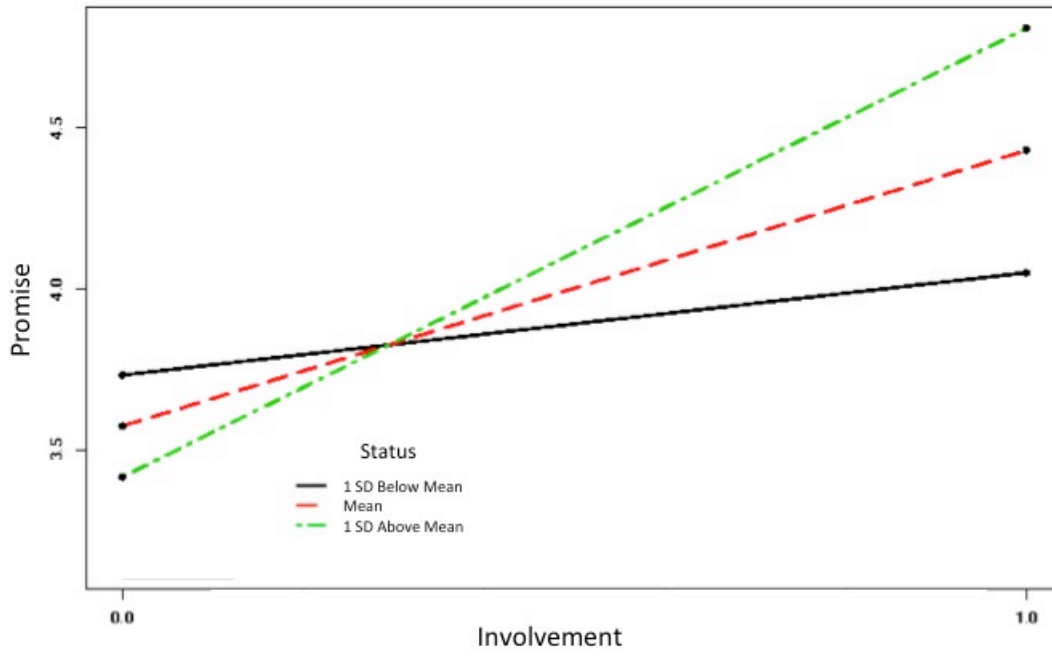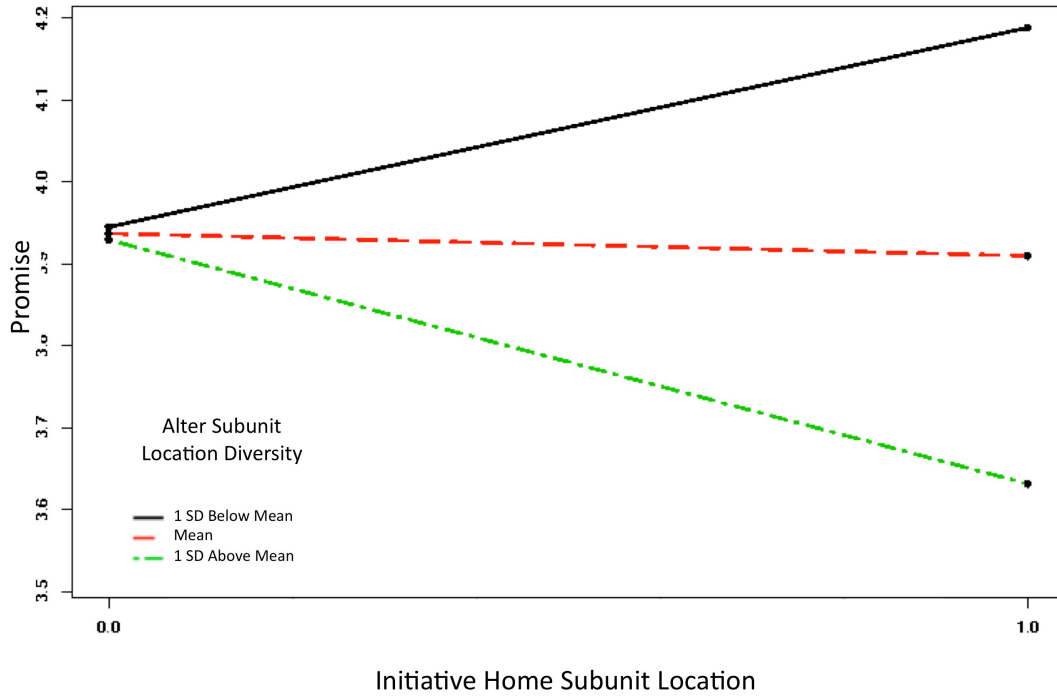FIGURE 6: Interaction of Involvement and Work Experience

FIGURE 7: Interaction of Initiative Home Subunit Location and Alter's Subunit
Location Diversity

BIOGRAPHY

Peter Boumgarden is a PhD Candidate in Organizational Behavior and Strategy at Olin Business School, Washington University in St. Louis. His research sits at the intersection of the micro-process of organizational behavior and the macro-orientation of strategy and organizational theory. Currently, he is working on various projects to specify the ways in which the formal and informal structures of an organization are related to various innovation processes and outcomes. In other work, he has examined decision-making around trust and the role of social relationships in shaping negotiation and exchange outcomes. His work with Dr. Stuart Bunderson on team structure and learning was recently published in *Organization Science* (2010). Peter has conducted field research with several large multi-national Fortune 500 companies, and has additionally consulted and advised numerous for- and not-for-profits on their work on strategic orientation and processes related to innovation. In the spring of 2010, Peter accepted a job as an assistant professor of management at Hope College in Holland, Michigan.