

The Generative Archetypes of Idea Work

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Abstract

Anyone who absorbs and generates ideas in the context of everyday work is engaged in idea work. Building on Jung's psychological theory of types, we theorize about the fundamental processes underlying one's generative capacity, and in turn, one's ability to generate ideas and engage effectively in idea work. We extend our theory by exploring the idiosyncrasies characterizing processes of collective idea work and their embeddedness in generative space. Finally, we provide some insights regarding creativity and innovation in everyday work practices as well as discuss considerations for the design of environments and tools that are conducive to idea work.

Keywords: innovation, creativity, generative capacity, generative archetypes, Jung

1. Introduction: Background and Aspirations

Anyone who absorbs and generates ideas in the context of everyday work is engaged in idea work. Idea work has become widespread particularly in contemporary organizations that thrive on creativity and innovation. A growing part of the labor force creates for a living and almost all professionals are expected to be creative in some fashion. The rise of the creative class (Florida, 2002) has been underscored by the European Commission that has made 2009 the European Year of Creativity and Innovation¹, reflecting the increasing importance and dissemination of idea work across all sectors of the economy and society.

Idea generation is at the heart of idea work practices—it is a fundamental process in any creative activities and subsequent innovation. A thorough study of the mechanisms underlying idea generation can provide the basis for understanding as well as designing environments and tools that can help people to realize their generative capacity and consequently to be more innovative.

In this article, we look into the black box of idea generation and contribute to further understanding of the fundamental mechanisms that underlie idea work. Naturally, the drivers of idea work are associated with creativity and innovativeness, which have been long a centerpiece in the human experience. The bulk of the social sciences literature that covers creativity and innovativeness emphasizes features of work environment that promotes one's creativity. For instance, it purports that creativity is a consequence of motivation, autonomy, work settings, climate, workload, as well as personal characteristics (Amabile *et al.* 1996). Considerations also include wider scope determinants of innovation such as organizational vision (Swanson and Ramiller 1997), technological infrastructure (Broadbent *et al.* 1999), or institutional factors (King *et al.* 1994). However, while the conditions conducive to creativity and innovativeness have been elaborated vastly in the discourse, there is not much attention to the source of ideas and particularly to their generation process as it takes place in everyday work practices.

¹ See <http://create2009.europa.eu/>

Building on Jung's (1953) ego-functions, we suggest four archetypes of idea generation processes: *Thinking*, *Feeling*, *Sensing*, and *Intuiting*. Each of the four archetypal processes stems from different aspects of human cognition and jointly they form one's *generative capacity*, that is, one's "ability to rejuvenate, to produce new configurations and possibilities, to reframe the way we see and understand the world, and to challenge the normative status quo in a particular task-driven context" (Avital and Te'eni 2009). We explore the unique features of each generative archetype and discuss the complementary relationships among them in the context of idea work.

Next, we elaborate on the concepts of idea work and generative capacity as well as on Jung's psychological theory of ego-functions, which jointly provide the theoretical foundation for our framework. Then, we present the four generative archetypes of idea work and offer insight into the idiosyncrasies and multiplicities of idea generation trajectories. Moreover, we look into the dynamics of idea generation through analyses of the dialectic relationship between pairs of generative archetypes. We conclude with a discussion of possible implications of our framework to idea work and explore further avenues for research.

2. Theoretical Foundations

The foundation of the generative archetypes of idea work is anchored in three main observations: Jung's theory of psychological types, the presupposition that generative capacity is a human trait, and the observation that idea work has become prevalent practice in everyday work. The interrelations among these central observations and their theoretical basis form the foundation of our thesis about idea generation. Consider the following:

- Idea work refers to affirmative relationship between people and ideas in a task-driven context of everyday work practice. Idea generation is the cornerstone activity of idea work.
- Generative capacity refers to a person's capability to be creative and innovate. Idea work is best done in environments that are conducive to enhancing one's generative capacity.

- Jung's theory of types refers to four unique ways of perceiving and acting in the world. Subsequently, Jung's theory can explain the fundamental processes underlying one's generative capacity, and in turn, one's ability to generate ideas and engage in idea work.

In the remainder of this section, the theoretical foundation of each of these three main observations is discussed in the context of idea generation.

2.1 Idea work

We all absorb and generate ideas at work in various capacities. Idea work relates to how people conceive, reinforce, combine, reject, test, recombine, and develop ideas in a task-driven context (Clegg *et al.* 2008 – thematic description of idea work). Naturally, idea work is closely associated with creativity (Amabile *et al.* 2005) and innovation (Carlsson 2004). Although the creativity literature has been dominated by a static perspective that treats creativity as an outcome—i.e. an actual idea or solution, its dynamic characteristics require a process-oriented perspective (Drazin *et al.* 1999). This observation becomes evident in the context of idea work where *ideas* are simultaneously the main input, content and deliverable (Clegg *et al.* 2008). Subsequently, in this paper, we propose and use the following general working definition: ***Idea work is the process of engaging in acts of absorbing and generating ideas in the context of everyday work practices.***

This conceptualization of idea work has five elements. Firstly, it stresses the process view of idea work, in contrast to the static outcome-oriented perspective that has dominated much of the creativity research. Secondly, “engaging in acts” reflects the importance of the role of individual agency in idea work processes. Thirdly, the definition highlights the interplay between absorbing and generating ideas. The complementary relationships between these two underlying processes, which enable and constrain one another in a cyclical fashion, constitute the foundation of idea work. Fourthly, stressing that idea work processes takes place in a context acknowledges its embedded and situated nature. Finally, emphasizing that idea work takes place in everyday work practices embraces the view that anyone can be involved in processes of idea work—absorbing and generating ideas—at all times, and that idea work is not confined to particular roles, functions, or eureka moments.

We envision idea work as engaging in a continuous and infinite idea stream that has no beginning or end. Moreover, given that ideas are ubiquitous within organizations, we can therefore view organizations as idea factories (Van de Ven and Johnson 2006) where groups of individuals engage in the coproduction and testing of different, potentially conflicting, ideas. These ideas and concepts are themselves related in complex, multi-dimensional, dynamic idea networks (Wang 2009; Davenport and Beck 2001).

Processes of idea work within task-driven contexts of creativity and innovation can include practices such as: idea linking, idea contextualizing, idea refining, and idea testing (Birkinshaw *et al* 2008). *Idea linking* occurs when individuals in the organization make connections between new and existing ideas emerging inside or outside the organization² (Ibidem:835). However, idea linking can also refer to a process of linking the multiple, potentially conflicting, ideas of a group of individuals engaging in idea work. *Idea contextualizing* entails a back-and-forth interaction between issues that have to be addressed and a set of possible solutions. *Idea refining* is a form of disciplined imagination (Weick 1989), a process of hypothetical trial and error related to conceptualizing the implications of a particular idea in terms of how it might work in practice or other contextual settings with the aim of sharpening the new idea (Birkinshaw *et al* 2008:835). Finally, *idea testing* involves the implementation of the idea in order to enhance the underlying rationale. This process of idea testing can potentially lead to the construction, testing, and reification (Weick 2003) of other ideas, hence, constituting a virtuous cycle of idea work.

Idea work is thus primarily associated with the surface-level of everyday organizational practices in work-related creative and innovative contexts, where ideas constitute the generative or productive core. Yet, in order to obtain a more holistic understanding of idea work in organizations, we need to unravel the idiosyncrasies and multiplicities of idea work practices as well as the motivational, energizing drivers of people engaging in idea work. Hereto, we will draw on the concept of generative capacity and Jung's four ego-functions.

² Idea linking is therefore closely related to the concept of knowledge brokering (Hargadon, 2003); a process of linking new problems to old solutions developed in other domains

2.2 Generative Capacity

The concept of generative capacity is derived from the notion of generativity, which refers to the ability to originate, produce or procreate. The concept of generativity has been used effectively in multiple disciplines, for example: generative theory (Gergen 1994), generative metaphors (Schön 1979), generative inquiry (Zandee 2004), generative buildings (Kornberger and Clegg 2004), and generative fit (Avital and Te'eni 2009). All of these conceptualizations reflect openness, new ideas, and breakthrough action.

In the context of idea work, generative capacity refers to one's ability to generate creative ideas that lead to innovation or produce overall value. Generative capacity comprises one's ability to rejuvenate, to produce new configurations and possibilities, to reframe the way we see and understand the world and to challenge the normative status quo in a particular task-driven context (Avital and Te'eni 2009).

Both generative capacity and idea work are inherently linked to creativity. Additionally, all three concepts—generative capacity, idea work, and creativity—are inescapably associated with innovation and other ingenious processes occurring in work-related contexts. Yet, the three concepts are different in nature, and therefore it is appropriate to provide a clear conceptual juxtaposition.

We already established that idea work is directly related to creativity and innovation in everyday work, hence, to the surface-level of *organizational practice*. Generative capacity, however, refers to the ability of an individual to produce new configurations and therefore represents the personal foundation, or *root-cause*, from which idea work emerges. This distinction between idea work and generative capacity is rather straightforward and represents a level difference,

However, more confusion and ambiguity exists with respect to the difference between generative capacity and creativity. Whereas creativity focuses primarily on the creative *output*—i.e. the newness, uniqueness, or utility of the output—with no clear understanding of the mechanics and source of creativity, generative capacity focuses on one's potential to

produce a creative output, hence, it elucidates the *root-causes* underlying creativity, and subsequently idea work (Avital and Te'eni 2009; Drazin et al. 1999).

Therefore, by taking the concept of generative capacity as our point of departure, this analysis is characterized by a shift in focus, moving from a discussion of creativity, which is geared toward a finite end-result (output), toward a discussion of generative capacity that centers on the perpetual and life-giving sources of idea work. Consequently, it is through this extension of idea work theory that we hope to disentangle the different processes and mechanisms of generativity underlying everyday idea work practices in organizational contexts. Hereto, we will first explore Jung's psychological theory of types, which sheds light onto the fundamental psychological processes underlying generative capacity and idea work consecutively.

2.3 Jung's Typology of Ego-Functions

According to Jung (1953), one's Ego has four interrelated fundamental functions or ways of responding to the world—two rational or reason-based ways of judging and responding to reality, and two irrational or stimuli-based (i.e. not reason-based) ways of perceiving and enacting the world. As illustrated in Figure 1 below, rational judgment governs *thinking* and *feeling* functions (Y-axis), and perceived stimuli govern *sensation* and *intuition* functions (X-axis).

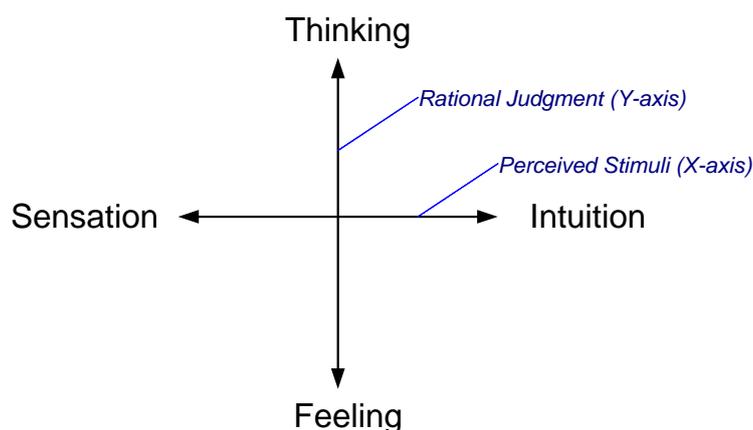


Figure 1: The Jungian typology of ego-functions

Based on Jung's typology, *thinking* refers to rational analysis and a deliberate act of judgment that relies on logic in order to identify structures and patterns and establish conceptual connections. In contrast, *feeling* is also a deliberate act of judgment, however, in lieu of logic, it relies on a value-based affective criterion of acceptance or rejection (i.e., "like" or "dislike").

Whereas thinking and feeling are governed by deliberate acts of rational judgment, sensation and intuition are governed by perceived stimuli and are not subject to the laws of reason. With no clear reason and rationale involved, they are considered erratic or irrational Ego-functions. *Sensation* refers to the interpretation of physical stimuli through the sense organs that relies on perceived external physical qualities. In contrast, *intuition* refers to the interpretation or an instinctive appreciation of inspired or non-physical stimuli that relies on internally conceived intangible qualities.

In addition to the discussion of these four functions, Jung's theory of psychological types includes an *Extraversion-Introversion* dimension, on which thinking and feeling as well as sensation and intuition can be further juxtaposed. *Extraversion* refers to an outward orientation in which one relates to an object and directs all interest toward that object. In other words, one thinks, feels, and acts in relation to an external object of interest. In contrast, *introversion* refers to an inward orientation in which one relates to the self and focuses all interest inward. In other words, one thinks, feels, and acts as the self is the chief factor of motivation; while external objects may receive secondary attention at best.

Consistent with the holistic view of Jung's (1953) theory of ego-functions, the two judging and the two perceiving functions are interrelated in a compensatory fashion. Therefore, a person usually has one highly developed and conscious function, the *principal function*, a secondary or *auxiliary* function, a third function, which is slightly suppressed and unconscious—the opposite of the second—and a fourth, completely suppressed function—the opposite of the first. For example, in the case where thinking is the dominant principal function and intuition is the secondary or auxiliary function, sensation is tertiary and slightly concealed, and feeling is the last and most unconscious and suppressed function.

3. The Generative Archetypes of Idea Work

Jung's typology of ego-functions lays the foundations for four generative archetypes of idea work, namely: *thinking*, *feeling*, *sensing* and *intuiting*. Each archetype represents a distinct and fundamental idea generation process that draws directly on the respective psychological characteristics of its parallel ego-function, as illustrated in Figure 2 and subsequently summarized in Table 1. Idea work and innovation, as part of a far more complex social process, are interrelated to the ways in which individuals interpret, act, and ascribe meaning to the world (McCabe 2002:509). The ego-functions, as ways for perceiving and responding to the world, can therefore help to shed light on the complexity of processes and practices of idea work in organizational contexts. To illustrate how these ego-functions in the form of generative archetypes constitute idea work processes, we will draw upon a number of seminal theories from the field of organization science.

Thinking is an analytical form of idea work that builds on one's cognitive and reflective faculties to make reasoned judgment calls. Accordingly, its validity stems from logical and economical rationale. It is governed by structured analysis that draws on visible and quantifiable codified data in search for meaningful structures and patterns. In the managerial context of idea work, thinking underlies the hallmark of management science—decision-making and problem-solving (Simon 1991).

The thinking archetype of idea generation sets the foundation of the rational choice school of thoughts, which evidently embodies a constituent analytical judgment mindset. Rational choice theory presupposes that humans are perfectly informed, self-interested rational actors who have the ability to make analytic judgments towards desired ends. Rational choice theory tends to equate decision making with the solving of a mathematical optimization problem, and in turn assumes that an individual has access to all necessary information, is fully aware of all possible choices or action paths, and has a probability distribution for outcomes related to different potential choices.

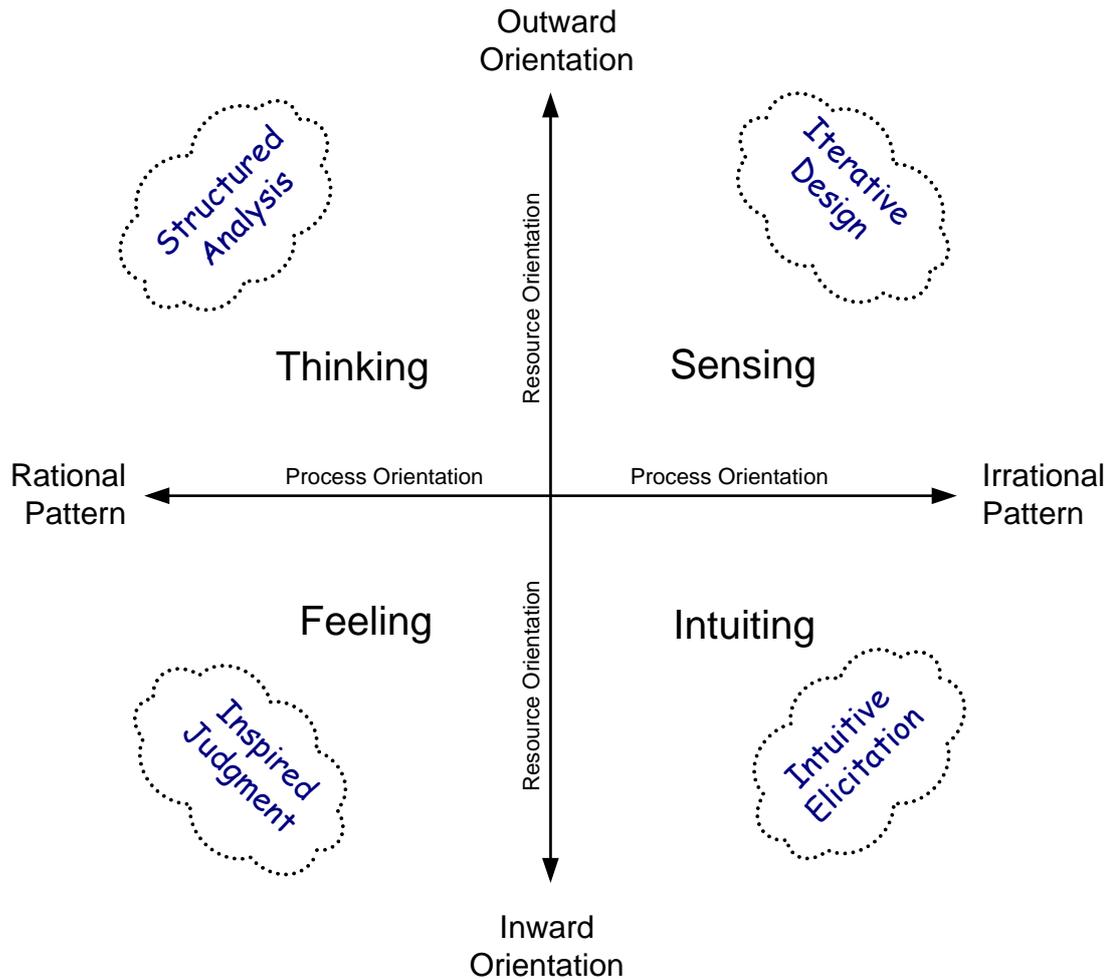


Figure 2: The generative archetypes of idea work

Rational choice theory laid down the foundation for the rational theory of management, which holds that organizations have goals and that they behave in ways that are consistent with achieving these goals (Markus 1983). Building on the general tenets of this rational theory of management, information systems are often designed to optimize work, to enhance managerial decision-making and planning, and to improve communication and coordination among people within and outside the organization. Considering that in practice perfect rational decisions are not feasible, the theory of bounded rationality (Simon 1991) relaxes several of the assumptions underlying rational choice theory, yet, it still stems from the notion that humans are rational, albeit partially. As such, these economic theories of human action clearly reflect the logical, analytical, and economical form of judgment that we refer to as thinking.

<i>Idea Work Archetype:</i>	<i>Judging</i>		<i>Perceiving</i>	
	Thinking	Feeling	Sensing	Intuiting
<i>Nature</i>	Analytical	Affective	Physical	Innate
<i>Process</i>	Structured analysis	Inspired judgment	Iterative design	Intuitive elicitation
<i>Drawing on</i>	Codified data	Affective response	External stimuli	Tacit knowledge
<i>Process Orientation</i>	Rational, Reason-based	Rational, Reason-based	Irrational, Stimuli-based	Irrational, Stimuli-based
<i>Resource Orientation</i>	Outward-turning	Inward-turning	Outward-turning	Inward-turning
<i>Psychological Orientation</i>	Cognitive-Reflective	Affective-Emotional	Sensual-Behavioral	Instinctive-Visceral
<i>Managerial Style</i>	Decision making	Best practices	Trial-and-error	Brainstorming
<i>Rationale</i>	Rational, Economical	Case based, Value-based	Experiential, Action-based	Grounded, Situated

Table 1: Juxtaposing the four generative archetypes of idea work

Feeling is an affective form of idea work that builds on one's emotional faculties to make reasoned judgment calls. Accordingly, its validity stems from value-based and case-based rationale. It is governed by inspired judgment that draws on one's affective response in search for value-based directives and guidance. Value-based judging is influenced by what people like or dislike and what people perceive appropriate and inappropriate, hence, feeling is affected by norms and values as well as field practices. In the managerial context of idea work, feeling draws insights using value-based inspiration and appreciation.

The feeling archetype of idea generation can be illuminated by the concept of institutional isomorphism (DiMaggio and Powell 1983)—a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions. We draw upon this notion not necessarily to suggest homogenization of idea work, but to explain how idea generation is affected by value-based judging, i.e. feeling. First of all, idea work is affected by a need and desire to conform to cultural expectations of the broader context in which an individual or organization operates (referred to as coercive isomorphism). Second, in the context of uncertainty, such as is in the case in innovation,

copying what already works well from organizations that are perceived to be more legitimate or successful in a particular industry or environment, is an inexpensive way of creating viable solutions, while simultaneously enhancing corporate legitimacy (referred to as mimetic isomorphism). This is what is popularly referred to as the adoption of best practices. Third, idea work occurs in organizations made up of creative professionals, who draw on their educational base and professional networks as both active and passive models informing action and behavior in idea work processes (referred to as normative isomorphism).

Sensing is a physical form of idea work that builds on one's sensual and behavioral faculties to perceive concrete stimuli via interaction and interpretation of external cues. Accordingly, its validity stems from experiential and action-based rationale. It is governed by iterative design that draws on trial-and-error interaction with various external sources of stimuli in search for insight and novel configurations. In the managerial context of idea work, sensing takes place in prototyping based methodologies and participative grassroots action.

A related perspective that helps to shed light on sensing-based idea work practices in organizations is the notion of learning by doing (Von Hippel and Tyre 1995, Von Hippel 2005). Since most problems presented to problem solvers are ill-structured (Simon, 1973), problem-solving practices tend to entail a process of learning by doing, i.e. a form of trial-and-error problem solving. This trial-and-error learning can involve a process of *templating* (Von Hippel and Tyre 1995: 5), which is a form of pattern matching that is sensitive to the interferences among objects that may have very different features or functions. These two very different and highly complex patterns—for instance a new technology (the solution under development) and the organizational context in which it is installed—are brought together during the process of doing and reveal a set of problems that were not envisioned in the design process. These problems inform a learning process, which lead to the subsequent revision of the solution under development.

In a later work, Von Hippel (2005: 63) explains that this trial-and-error process of learning by doing can be represented as a four-phase cycle that is typically repeated many times during the development of a new product or service. Problem solvers first conceive of a problem and a related solution based on their best knowledge and insight. Next, they build a prototype, either physical or virtual, of both the potential solution they envisaged and the

environment for intended use. Third, an experiment (the trial process) is run, i.e. the prototyped solution is run to assess what happens. Fourth and finally, the results of this experiment are analyzed to understand what happened and to evaluate the error information, i.e. the new information or learning that was derived from the experiment and not predicted. Subsequently, this new information and learning is used to adjust and enhance the solution under development before building and running a new trial, i.e. before starting the cycle all over again.

The notion of trial-and-error problem-solving and learning by doing is closely related to the aforementioned concept of *idea refining* (Birkinshaw *et al.* 2008). These processes illustrate the central importance of stimuli resulting from the trial-and-error development process. These stimuli can be either physical or virtual in nature and provide the problem solver with new information about the environment and the solution under development that was not envisioned *a priori*.

Intuiting is an innate form of idea work that builds on one's instinctive and visceral faculties to perceive intangible hunch-like stimuli, which are based on sudden inspiration or instinct, inner voice or vision, and even speculation and confabulation. Accordingly, its validity stems from grounded and situated rationale. It is governed by intuitive elicitation that draws on one's tacit knowledge. Rooted in one's deep structure, tacit knowledge entails embodied skills that stem from the tight coupling between perception and action (Polanyi 1966). In the managerial context of idea work, intuiting is an inspirational and imaginative form of idea generation that is often used in brainstorming sessions. It helps a person to make decisions and to find new creative solutions, without using any analytical or logical way of thinking (Dourish 2001).

The concept of tacit knowledge underlies Dourish's (2001) theory of embodied interaction, which can help to shed light onto the application of the intuiting-archetype of idea work. The theory of embodied interaction is developed to understand the contributions and opportunities emerging from dynamic new forms of technological practice (Dourish, 2001:ix). It is a particular approach to design and analysis of interaction that takes embodiment to be central to, even constitutive of, the whole phenomenon (102). In analyzing the relationship between people and systems it emphasizes skilled, engaged practice rather

than disembodied rationality. It draws upon the phenomenological tradition to argue that everyday activity is based on natural practice rather than abstract cognition. Embodied skills are tacit skills, those things that we do unconsciously and inexpressibly as we go about creating technological systems and interacting with them drawing on experienced-based intuitions and unarticulated mental models.

Two examples of embodied interaction are tangible and social computing. The first approach to computing enables people to interact with digital information through the physical environment, i.e. through real world objects with which people are already familiarized. It represents the notion of embodiment by moving computation and interaction out of the world of abstract cognitive processes into the realm of the phenomenal world within which other forms of interaction occur (Dourish 2001:103). The second approach, social computing, has to do with supporting social behavior in or through computational systems, as well as enabling the dissemination of information throughout social collectivities within and across organizations. It exemplifies embodiment in that it is concerned with the relationship between social action and the environments in which it unfolds (Dourish 2001:103).

While clearly each of the four archetypes of idea work can contribute to one's generative capacity, one's actual preference and subsequent use of the abovementioned archetypes to generate ideas is likely to be predisposed to his or her unique natural Jungian ego-functions configuration.

In summary, how people conceive, reinforce, combine, reject, test, recombine, and develop ideas (Clegg *et al.* 2008 – thematic description of idea work) is dependent on their natural disposition toward the world and presumably the environment they work in. However, all other things being equal, we may conclude that the four archetypes provide a rounded approach for idea work. Sensing can provide new observations about the world. Thinking can provide insights based on the identification of new structures and patterns. Feeling can provide insights regarding whether a phenomenon is acceptable or not and whether we like it or not. And finally, intuiting can provide the magic touch and serendipitous discoveries that are unlikely to be discerned in any other way.

4. Dialectics of Generative Archetypes of Idea Work

Having discussed the four archetypes of idea work, the next step is to explore how these archetypes are potentially interrelated and interdependent. We propose that the relationships among these archetypes can be understood via an analysis of the dialectics linking them. We do not refer to dialectics in the Socratic sense, that is, dialectics as a method for resolving disagreements and a search for truth through rational discussion and candid deliberation. We treat dialectics as a phenomenological medium that helps us make sense of the world.

Dialectics are conducive to fertile idea work, as they are based on a form of reasoning that results from the conflict between two diametrically opposed viewpoints (Churchman 1971). In particular, we examine the complementary relationship between opposite ends and seek to understand how a dynamic balance between them creates wholes. Specifically, we examine the relationship among pairs of idea work archetypes and seek to understand how they operate, and subsequently, how we can account for it in designing systems and organizations.

In dialectical relationships, conflicts and tensions arise due to juxtaposing different views, approaches, or ways of responding to the world. Taking advantage of the differences underlying these conflicts can create opportunities for idea generation. An attempt to repress conflict between pairs of archetypes curtails the freedom of idea work. Practices of idea work that incorporate the diversity inherent to the dialectical process between generative archetypes spur novel and creative ideas through encountering diverse ways of viewing and enacting phenomena (Van de Ven and Johnson 2006).

Given the fact that the four archetypes of idea work jointly constitute one's generative capacity, it is useful to briefly disentangle the dialectics between these four archetypes underlying idea work processes. Jung (1953) describes how the two perceiving functions, sensing and intuiting, provide the maternal soil from which the judging functions, thinking and feeling, arise. Perceptions or insights as generated by our sensing and intuiting functions thus form the impetus for rational and subjective judging in a dialectic relationship between ideal-typical archetypes (Table 2).

<i>Perceiving</i>	<i>Dialectical Relation</i>	<i>Judging</i>
Intuiting	Intuitive Thinking	Thinking
Intuiting	Intuitive Feeling	Feeling
Sensing	Sensory Thinking	Thinking
Sensing	Sensory Feeling	Feeling

Table 2: Overview of dialectical relations among pairs of idea work archetypes

The dialectics between thinking and intuiting, *intuitive thinking* entails the criticizing and arranging of representations according to norms that are unconscious, hence, irrational. It therefore includes both elements of analytical judgment and tacit knowledge for generating ideas. Consequently, in the managerial context of idea work, rational decision-making will be based on tacit know-how grounded in situated and embodied experience and skills.

The dialectic relationship between feeling and intuiting, *intuitive feeling*, establishes values without voluntary or conscious participation. In the managerial context of idea work, this dialectic between archetypes results in decision-making based on elements of both subjective judging—acceptance or rejection—and tacit knowledge. For instance, best practices represent a culturally acceptable form of organizational tacit knowledge, grounded in one's feeling-based judgment.

In the dialectics between thinking and sensation, *sensory thinking*, sensations are assimilated into rational associations. Consequently, in the managerial context of idea-work, this dialectical relation between archetypes results in decision-making based on rational, analytical judgments—i.e. thinking—that are influenced by perceived cues and trial-and-error processes of learning by doing concurrently.

In the dialectics between feeling and sensation, *sensory feeling*, sensation forms the physiological impulse for subjective, value-based judging. In the managerial context of idea-work, this dialectic between archetypes will result in processes of decision-making that are

simultaneously based on value-based judgments—i.e. feeling—and trial-and-error processes of learning by doing as influenced by perceived cues.

In and of their own, each of the four archetypes of idea work are ideal-typical and as such are unified analytical constructs that potentially have no counterpart in actual processes of idea work as they occur in the practice of everyday work. Rather, when people engage with ideas in their everyday work, they are more likely to display characteristics of one or more interacting and dialectically evolving archetypes.

5. Discussion

So far, we presented our stream of insights and ideas about four generative archetypes of idea work and the dialectical relations among pairs of idea work archetypes. We now turn to a discussion of the implications of our insights for deepening our understanding about idea work by moving towards a supraindividual level view of idea work and by looking at how collective idea work processes are embedded in generative space.

5.1 Extension of theory from an individual level to a supraindividual level

Heretofore, our discussion has been primarily geared toward the individual and his or her generative capacity to engage in idea work. Yet, in order to disentangle group- and organizational level processes of idea work, we need to move beyond a mere discussion of individual-level creative and cognitive processes. In this paragraph we explore three views on knowledge, creativity, and innovation that provide insights into theorizing about supraindividual idea work. These include a sensemaking perspective, the notion of collective creativity, and the concept of distributed cognition. These will be augmented by a fourth view that stresses the importance of generative space (Kornberger and Clegg 2004; Yorks 2005), a supportive environment, within which these processes of collective idea work are embedded.

Traditionally, most literature on creativity and innovation has adopted a functionalist-reductionist approach which allowed researchers to model the functional contributions of units at lower hierarchical levels—e.g. the individual or the group level—to outcomes at

higher levels—the organization as a whole—by assuming that creativity at a higher level is the mere aggregation of creative outputs at lower levels. In other words, an organizational-level creative output is viewed as the mere sum of its constituent creative outputs at the individual or group-level. This restricted view of higher level creativity is the immediate consequence of its outcome-oriented definition of creativity.

As Cook and Brown (1999) argue, groups and organizations need to be studied in their own right with respect to epistemological concerns. We cannot assume that whatever can be said about groups (or organizations) actually “boils down” to things about individuals. Rather, our process-oriented approach, based on the notions of generative capacity and idea work, allows us to move beyond this aggregationist view of higher-level creativity to a dialectical approach of collective creativity. This enables us to explore and disentangle the cross-level idiosyncrasies and multiplicities of idea work practices as well as the motivational, energizing drivers of people and groups engaging in idea work.

The first perspective of supraindividual creativity we draw upon is the sensemaking perspective, developed by Drazin *et al* (1999). As the authors hold, creativity at the organizational level is not the mere aggregate from individual or group efforts, rather, it emerges from a process of negotiating multiple and potentially competing interests between different communities or groups within the organization. Creativity in a group or at the organizational level is an iterative process resulting from collective sensemaking, communal engagement and conflictual negotiation between individuals or between groups respectively. Therefore, idea work at higher levels can result not only from ideas and configurations based on an individual’s generative capacity, but rather from the interactions and interdependencies among individuals and groups when engaging in these generative practices of idea work.

The second perspective of collective creativity is set forth by Hargadon (2006:484). In line with the sensemaking perspective describe above, the author’s view of collective creativity “...recognizes the fleeting coincidence of behaviors that triggers *moments* when creative insights emerge. [R]ather than viewing this eureka moment as the sole province of *individual* cognition, this perspective focuses on those insights that emerge in the *interactions* between individuals”.

Creative solutions are thus built from the recombination of existing ideas (Hargadon 2006: 485) from individuals engaging in creative collectives. Through social and collaborative processes as well as an individual's cognitive processes (e.g. reflection), knowledge and ideas are created, shared, amplified, enlarged, and justified in organizational settings (Alavi and Leidner 2001).

In a similar vein, we can obtain relevant insights with respect to supraindividual idea work practices by drawing on the concept of distributed cognition. Distributed cognition is a process whereby individuals in a group or organization exchange their personal interpretations of a situation, reflect upon them, engage in dialogue about them and inform action with them. As such it provides the conditions for surfacing and challenging underlying assumptions, for complicating their thinking, and for enabling change (Boland, Tenkasi and Te'eni 1994). In these collaborative processes, a so-called process of perspective taking occurs in which the unique thought worlds of different individuals or groups are made visible and accessible to others (Boland and Tenkasi 1995:359).

The abovementioned perspectives on supraindividual creativity help to shed light onto the social dynamics that characterize processes of collective idea work, yet, these can be augmented with a fourth perspective that stresses the importance of creating a social space that is conducive to collective generative learning (Yorks 2005). Generative learning involves double-loop learning (Argyris and Schon 1974), which is necessary to challenge the status quo, and as such is closely related to our notion of generative capacity.

The idea of creating a space that is conducive to collective idea work is strongly embedded in the notion of the generative building as developed by Kornberger and Clegg (2004:1108). According to the authors a generative building: ...invites its inhabitants to become 'illegal architects', (ab)using and (re)defining space according to the context and situation. As the basic precondition of organizational learning and becoming it provides the stage on which people can interact freely and enact their ideas creatively.

Similarly, Nonaka's (2001) notion of '*ba*' also stresses the importance of creating a space for within which "interaction" can occur. The author argues that knowledge is dynamically created not just by an individual, but through interactions among individuals and

with the environment. Ba is the context shared by those who interact with each other. Through such interactions, those who participate in this space evolve through self-transcendence to create new knowledge and ideas.

Interactions in a group increase the ability of its members to generate and shift between alternative frames of a given situation, different thought worlds (Dougherty 1992) or different idea work archetypes. Hence, these interactions among individuals who each possess diverse and different dominant archetypes “augment an organization’s capacity for making novel linkages and associations—innovating—beyond what any one individual can achieve” (Cohen and Levinthal 1990:133). As Cook and Brown (1999) argue: “[a] conversation affords more than an exchange in which the net sum of knowledge {or ideas} remains the same; it dynamically affords a *generative dance* within which the creation of new knowledge {and ideas} and new ways of using knowledge {and engaging in idea work} is possible.”

By drawing on the notions of collective mind and collective creativity, we can move beyond the view of organizational creativity as an aggregate of the creativity of multiple individuals, to a view of organizational idea work as a synergetic combination of individual minds through social interactions that triggers a shared cognitive process resulting in novel ideas, configurations and solutions. These interactions occur within a generative space in which the generative capacities of the individuals involved are dialectically evolving in a process of collective idea work.

6. Conclusion

Idea work, the process of engaging in acts of absorbing and generating ideas in the context of everyday work practices, forms the core of creative activities and subsequent innovation. This paper was an initial attempt to open up the black box of the process of idea work processes and its constitutive acts of generating and absorbing ideas. Hereto, we drew upon Jung’s psychological theory of types to propose four archetypes of idea work processes: *Thinking*, *Feeling*, *Sensing*, and *Intuiting*. Stemming from different aspects of human cognition, these

four archetypes jointly constitute one's generative capacity, that is, one's ability to produce new configurations and possibilities and challenge the normative status quo.

In addition to disentangling the root causes underlying idea work processes through the notion of generative capacity and generative archetypes, we provided an initial framework for understanding the dialectical relationships among the ideal-typical archetypes of idea work. Moreover, drawing on existing theories of supra-individual creativity, collective creativity, and distributed cognition, we extended our explorative journey of idea work processes to include an examination of higher-level processes of idea work in the context of everyday practices of communication and collaboration occurring in generative space.

These insights holds certain implications for future research into idea work processes occurring in task-driven contexts. Empirically testing the theory of the four generative archetypes of idea work requires researchers to adopt a process-oriented view and to be cognizant of the different levels of analysis involved when studying the interplay between individual and collective practices of generating and absorbing ideas. Since ideas are ubiquitous in organizations, a thorough understanding of idea work practices based on empirical research can provide relevant insights into many aspects of organizational life relating to different realms of problem solving, learning, creativity and innovation.

We suggest that a thorough study of the idea-work archetypes can guide systems designers who aim to enhance creative work, unstructured syntheses, serendipitous discoveries, and any other forms of computer-aided tasks that involve unexplored outcomes, expect fresh design alternatives, or aim at boundary spanning results. Last but not least, we submit that our theory can contribute to designing and equipping systems and work environments that help people realizing their generative capacity and consequently be more creative and innovative.

Our foundational theoretical approach to idea work is fostered by the notion of the importance of collective, generative ideation and the interrelatedness of positive images of the future and positive dialogues in supporting idea work processes within organizational contexts. Consequently, positive views of self, others, organization, and the future emerge and co-evolve, which potentially enable and encourage acts of generating and absorbing ideas

in collective processes of idea work. The theoretical framework offered here can provide insights both to those who wish to study creativity and innovation in everyday practices of work and to those who want to design positive environments and tools, which are conducive to idea work processes.

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