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INNOVATION AND CREATIVITY

Managing knowledge, creativity and innovation

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INTRODUCTION

Confronted with an ever more complex and ever changing socio-economic environment, and challenged by the acceleration of technology, firms are still looking to find efficient ways to organize innovation. The development in the past 30 years of the knowledge-based approaches of the firm (resource-based view, competence-based view, evolutionary approaches, etc.) has progressively highlighted the central role of knowledge management for conducting innovation processes. As underlined by Leonard Barton (1995), since firms are knowledge institutions, or well-springs of knowledge, they compete on the basis of creating and using knowledge for succeeding in their innovation processes: "managing a firm's knowledge assets is as important as managing its finances, and all aspects of product or process development must be viewed in terms of knowledge management and growth." The pioneering work of Nonaka and Takeuchi (1995) posits that knowledge creation in organizations is the central tenet of innovation, while Adler (1995) considers that "knowledge creation reaches into the heart of the process of technological innovation". The recent and active debates in the management literature on the notion of dynamic capabilities (Teece, 1996, 2007; Eisenhardt et al., 2000), seen as the capabilities of an organization to purposefully adapt and exploit the organization's resource base, have confirmed the strategic coupling between knowledge management and innovation processes. The new dynamic capabilities framework for corporate strategic management, especially in terms of organizational knowledge processes, has become the predominant paradigm for the explanation of innovation strategy.

While the strategic relationships between the processes of knowledge management and the processes of innovation have been progressively unveiled, this has also revealed a "blank spot" in the understanding of the innovation processes and value-chain: the intermediate role of creativity and creative processes. The place and role of managing creativity in this organizational framework appears to be growing concern among scholars as well as practitioners. A recent world survey conducted by IBM (2010) confirms that to accelerate and improve innovation, the key management challenge that will be faced by companies in the coming years is how to manage creativity in order to make deeper internal changes in their operations, and to experiment with drastic, sometimes

disruptive evolutions of their business model to achieve their strategic intentions.

The aim of this chapter is to situate and analyze how managing creativity should fit into the organizational framework orchestrated by the interactions between the management of knowledge and the management of innovation. In this contribution, we question the traditional view that places creativity at the preliminary stage of the innovation process. Following pioneering works on the management of creativity (Drazin et al., 1999; Mednick, 1962; Woodman et al., 1993), we suggest in the following that managing creativity is equivalent to managing ideas, and argue that the main theoretical obstacle is that at the present stage ideas are mostly "black boxes" in innovation theories (Birkinshaw et al., 2011). In an effort to "open this blackbox" (see "Managing ideation processes in organizations"), we come to the conclusion (see "Managing the tension between the ideation and the innovation process") that a major change of perspective is needed in management: instead of viewing the management of ideas as an initial stage of the innovation process, we propose an integrated framework where the processes of ideation and innovation are not sequential but coupled, and where these strategic interactions are mediated by knowledge-management processes. Such a change of perspective suggests drastic impacts on the ways to manage organizations, which are discussed in the conclusion of this chapter.

MANAGING IDEATION PROCESSES IN ORGANIZATIONS

For a long time, the analysis of idea generation was the exclusive domain of psychologists who focused on the cognitive styles of individuals, on their cognitive capacities and their personality traits. Over time, organizational creativity gained attention in management research as firms' capacity to create new ideas and knowledge has been increasingly recognized as a strategic challenge. The studies expand on the contexts and tools favouring the individual (Amabile et al., 1996), groups (Taggar, 2002) and organizational creativity (Drazin et al., 1999; Woodman et al., 1993). Fed by and based on ideas, creativity in the organization can be defined as *"the production of novel and useful ideas by an individual or small group of individuals working together"* (Amabile, 1998). From these perspectives, the literature started to unveil the complex process of ideation, from the initial generation of ideas to a rich and dense concept activating the generative potential of intersecting knowledge bases. After an historical perspective on the origins of the concept of creativity in organization, we expose the four main steps supporting the ideation processes: the intention, the "spark", the "social construction", and the "landing".

A key issue remains the place and role of this process of ideation in the strategic framework of organization. The literature in the 1990s tended to limit the role of ideas to the beginning of the innovation process, thus considering that the ideation process is just a preliminary stage among others that lead to innovations viewed as the result of successful implementation of creative ideas within organizations and markets (Amabile, 1988; Staw, 1990). In such a perspective, as for any stage in the innovation process, the role of knowledge management is limited in supporting the different ideation process activities (codifying, storing, recording, etc.). We will strongly question this perspective and argue that creativity is both an input to the innovative outcome and a part of the innovation process. Both creation and innovation are the process and the outcomes, and interact in the complex social system of the organization.

Unveiling the Ideation Process: An Historical Perspective

Following research initiated by Poincaré, Wallas and Csikszentmihalyi, the creative process has been first conceptualized at the individual level as the iteration of short cognitive loops between idea generation and idea selection, starting from problem identification, and strongly driven by the motivation and creative skills of the creative worker (Runco and Chand, 1995). These pioneer authors describe the ideation process – from the initial generation of an idea to a mature concept having the potential to be implemented in an innovation – as a long and intricate process. Wallas based his vision on the Poincaré story that relates the process of the discovery of the Fuchsian functions (Poincaré, 1908). He models the creative process in four steps: preparation, incubation, illumination and verification (Wallas, 1926). More recently, other authors, analyzing artistic processes, point out a series of very short back-and-forth movements between the generation of an idea, its development and its evaluation (Doyle, 1998; Getzels and Csikszentmihalyi, 1976). Lubart analyzed in further details the sub-processes that support the production of creative ideas (Lubart, 2001). For instance, at the step of preparation, the sub-steps of identification, formulation and reformulation of problems are frequently mobilized in the creative work (Getzels and Csikszentmihalyi, 1976). Other authors include under the term “problem finding”, prior to problem solving, the steps of discovery, construction, expression, positioning, definition and identification of the problem, without specifying a specific sequence of action (Runco and Row, 1999). The quality of the output of creative work depends on the ability to correctly and intensely engage in processes of creativity, especially to define the problem (Getzels and Csikszentmihalyi, 1976), to

activate the divergent and convergent thinking (Basadur et al., 1982), and to use the ability to combine and reorganize the information into new categories that are going to drive the ongoing evaluation process (Mumford et al., 1991). Similarly, the intensive use of analogy and bisociation seems to be common to all creative types, inventors, artists and scientists alike (Koestler, 1964; Weisberg, 1986, 1993).

In the mid-1950s, the literature started considering that the creative processes can be deployed at the collective level. At the group level, Osborn based his creative method of problem solving on a process with six steps: the *Objective finding*, the *Fact finding* and the *Problem finding* to understand and define the problem and the objective, the *Idea finding* to generate ideas about the problem and the *Solution finding* and the *Acceptance finding* to find, design and act the best solutions (Osborn, 1953). A similar creative process is proposed by Amabile: problem identification, preparation, idea generation, idea validation and assessment (Amabile, 1998). At the organizational level, in change and development organization, the creative activity is conceptualized as a circular process: ideas begin with problem generating, followed by problem formulating, solution developing and solution implementing, and finally organization reacts to this implementation solution, generating new problems, and the process begins anew (Basadur et al., 2012). For Basadur, each stage of this process requires specific attitudinal, behavioural and cognitive skills in order for it to be successfully completed (Basadur et al., 2012). Furthermore, faithful to the Amabile's componential model, the creative performance of an individual depends on her relevant knowledge of the domain, her creative skills and her intrinsic motivation. The positive action of intrinsic motivation in creativity has been confirmed by other researchers (Dewett, 2007; Ford, 1996; Woodman et al., 1993). However, extrinsic motivation can also have a positive impact on creative endeavours (Eisenberger and Rhoades, 2001; Friedman, 2009), and Amabile points out a motivational synergy between intrinsic and extrinsic motivation (Amabile, 1993). Intrinsic motivation is central in Amabile's componential model because the creative potentialities of domain-relevant knowledge and creativity-relevant skills can only be fully expressed and exploited when the intrinsic motivation is high, where the motivation is determined by the degree to which the motivation emanates from the self (Ryan and Deci, 2000). According to the Cognitive Evaluation Theory (Deci and Ryan, 1985), the contextual characteristics affect two aspects of intrinsic motivation – informational and controlling – and thus also impact creativity.

The impact of social context in creativity, in interaction with personal characteristics, was

addressed in multiple theories. Woodman et al.'s central contribution draws up a multilevel, interactionist, and integrationist model of creativity in which creativity is influenced by both situational and dispositional factors (Woodman et al., 1993). In the interactionist model, creativity is the result of the interaction between individual, group and organizational variables. Social influence and context (working context) facilitate or inhibit the potential of the individual, acting on his or her behaviour in the group, which determines the creative performance of the organization. Following Woodman et al., Taggar (2002) looked for empirical validation of part of this model. Taggar notably examined the effect of personality on the creativity of the group using the components of the Five Factor Model of personality (Taggar, 2002). The evolutionist model of individual creative action extends the interactionist model in making the synthesis of the psychologist approach centered on individuals, the sociologist approach centered on the context and the evolutionist approach centered on the variation, retention and selection of ideas (Ford, 1996). This model examines the factors that intentionally lead the individual to undertake a creative action, which forces and facilitates creative action both individually and collectively. At the organizational level, the model considers that creative and conformist actions are constantly in competition, facilitated or constrained by the frameworks of thoughts in permanent construction in the organization (see also Drazin et al., 1999). In Ford's model, the creative commitment is thus dependent of the construction of meaning, motivation (objectives, responsiveness to standards of action, confidence in his or her abilities, emotion), and knowledge and skills (knowledge in the domain, social ability, creative ability).

In a complementary model, Drazin et al. (1999) developed the sensemaking factors of an evolutionist approach, where creativity is the process of sensemaking leading to involvement in a creative act whatever the nature of its result, as long as it is new, useful and feasible. This multilevel model of creativity focuses on the identification of the multiple factors that mediate, favour or inhibit the creativity in the group and the interaction between personality, knowledge, cognitive skills and social context. However, these models do not account for the organized creative process in groups and organizations. In the creative process, individuals do not activate the same cognitive skills at all steps and the context probably does not have the same effect on different creative workers at different steps of the process. So, we posit that for any individual, each step of a creative endeavour calls for a specific level of action, exploration and experimentation activities, cognitive artifacts and cognitive activities.

In the following section, we engage in an in-depth inquiry of the idea development and management process. According to the literature review of the creative process, idea management is a long, complex and highly strategic process for organizational creativity, which is fed and structured in large part by the knowledge-management system and processes.

The Main Phases of the Ideation Process: The Intention, the Spark, the Social Construction and the Landing

At the beginning, the intention of the creator triggers the building of the motivational, informational and knowledge context that favours the identification of a problem or challenge. Triggered by their internal or external motivation, people engage in a creative process either on open problems (the problem is fuzzy and the method for soving the problem must be designed) or closed problems (the problem is well identified and the method for solving the problem is known) (Unsworth, 2001). Fueled by intrinsic motivation, the creative activity can be autonomous, self-directed and proactive. In this case, the intention to solve a problem depends on individual motivation without organizational solicitations. Nevertheless, the organizational climate can have a strong impact on this type of creativity. Conversely, the creative activity can be a response to a problem presented by the organization. However, the interpretation of the organization's intention biases the creative work. The identification and framing of the problem is a crucial step in the creative process. The creative problem-solving process often involves an ill-defined problem (Mumford et al., 1991) and the creative worker must often re-engage with the problem-finding process to discover a problem that is relevant for both him/her and the organization (Getzels and Csikszentmihalyi, 1976). For example, the lead user creates innovations based on a use problem that he identifies earlier than other users (von Hippel, 1986). Because the lead user uses a product or service intensively, he or she is motivated to identify an important use problem before the others. It is an individual ongoing process based on collecting information at a conscious or unconscious cognitive level. Understanding a problem includes framing and reframing the issue, collecting and combining information, and formulating several possible questions (Lubart, 2001; Treffinger, 1995). The trigger of the process could be serendipity, the continuous observation of a repeated issue, or an insightful analysis that can lead to the identification and formulation of an interesting problem worth investigating and working on. Serendipity could be defined as "the art of making an unsought finding" (Van Andel, 1992); the way an individual analyzes and interprets an unusual phenomenon

by putting it to its objectives (Weisenfeld, 2009). A lot of great innovations are based on the observation of astonishing event, which is associated by analogy with other phenomena to formulate a new question or resolve a problem already identified.

The identification of the problem or challenge leads to the initial phase: the "creative spark" or idea generation. This phase is exploratory and aims at generating new insights through knowledge association and recombination. It can involve free exploration or a more disciplined approach using specific methods to generate new ideas – brainstorming (Osborn, 1948), creative problem solving (Osborn, 1952; Parnes, 1967), lateral thinking (De Bono, 1971), the TRIZ method (Altshuller, 1984), the C/K method (Le Masson et al., 2010) – or involve capturing new ideas from the inside out and from usages – user toolkits for innovation (von Hippel and Katz, 2002), crowdsourcing (Howe, 2008), design thinking (Brown, 2009). The effective execution of idea generation by the creative worker is based on cognitive processes and abilities (Mumford et al., 2009): divergent and convergent thought processes (Guilford, 1950, 1967); and the ways to handle, combine and synthesize the information with : the association (Mednick, 1962); the bisociation (Koestler, 1964); the lateral thinking (De Bono, 1971); and the analogy and the metaphor (Weisberg, 1993).

After the spark, the road ahead aims at maturating, challenging, enriching and validating insights. This *conversion* of the idea requires an investment in time, resources and efforts in order to clearly identify, actualize and extract the potential value of the idea. Throughout the literature, many researchers insist on the importance of transformation, conversion, maturation and "valuation" for the development of ideas in innovative organizations (Christensen and Raynor, 2003; Furr and Dyer, 2014; Govindarajan and Trimble, 2005). The Actor Network Theory provides an interesting framework for empirically analyzing processes in organizations (Whittle and Spicer, 2008). It sees organizations as networks of heterogeneous actors gathered together in more or less stable associations or alliances (Law, 1991). This theory has been used to study the functioning of innovation in organizations (Akrich et al., 2002a, 2002b; Callon, 1986; Harrisson and Laberge, 2002). In this model, the success of an innovation is explained by the ideator's capacity to interest and engage people that can be involved at different evaluation and valuation moments, or even become co-developers of the idea.

After the idea generation, the original "ideators" try to convince others of the newness, relevance and value of the idea. At the same time, they need to foster reactions, comments and

criticisms from more and more partners to challenge and enrich the idea. Ideas are more likely to be implemented when ideators have strong networking skills and a large number of ties in the organization (Baer, 2012). The idea moves from the firm to the market through a process of progressive "translations" in which it gradually changes as it is diffused beyond the limited circle of original ideators, and comes into contact with the interests of those who are going to exploit it or use it. In this translation process, the firm's ideators are not the only actors, for some of the process takes place beyond the firm's borders. Everything depends on finding the right spokespersons, those "who will interact, negotiate to give shape to the project and to transform it until a market is built" around the idea (Akrich et al., 2002b). In this approach, many studies point out the role of knowing communities in this process of conversion of the idea, where the idea would interest more and more actors until it is finally legitimated enough to be adopted by the firm (Harvey et al., 2015). In the video game industry, for instance, the members of the internal communities at Ubisoft have at the same time one foot in the cognitive construction of new ideas and another one in the innovative projects of the firm (Cohendet and Simon, 2007, 2015). They enrich the ideation processes (exploration) with the knowledge acquired in the project development of video games (exploitation). Other external communities, such as virtual user communities and brand communities, can also be a locus of idea generation, conversion and validation. In these online communities, the open spaces of collaboration facilitate knowledge collaboration and recombination of knowledge (Burger-Helmchen and Cohendet, 2011; Parmentier, 2015), and in opening these boundaries and the products and services for co-creation, the firm can capture valuable ideas (Parmentier and Mangematin, 2014). Moreover, these communities include lead users as spokespersons of the market, who are capable of altering and turning the ideas in a direction that will subsequently interest a broader public (Lilien et al., 2002). These communities act as an active device of exploration, exploitation and renewal of the "creative slack", a reservoir of potential new ideas (Cohendet and Simon, 2007), that will influence the strategic innovation pathways of the organizations in the future.

Two typically overlooked artifacts also seemingly play a key role at this conversion phase: the manifesto and the codebook. The manifesto, explicit or not, asserts a strategic positioning in differentiation and values, and favours collective enrolment. It provides the creative collective with an agreement on the orientation of efforts, focusing on shared meaning and on a well-understood and accepted common purpose. Manifestos can be found, for instance, in the unfolding of the cubist

movement (Sgourev, 2013; Cohendet et al., 2014), in "techno-emotional" cuisine in the form of the synthesis of elBulli cuisine (Capdevila et al., 2015; Svejenova et al., 2007), or in post claiming the *Trackmania spirit* in the creative user community of an online racing video game (Parmentier, 2015). What appears as a shared orientation in the symbolic dimension is completed by a systematic, more concrete effort to define the ways the idea is going to be used and exploited; its "grammar of use" is laid out in the codebook. The codebook generally emerges from the projection of the creative intention into the realm of users: what they need to know and do in order to fully benefit from the new idea, once it has been concretized into a new product, service or process. Often, prototyping will help in designing and refining the codebook. Both artifacts, the manifesto and the codebook, act as powerful complements to foster understanding and acceptance of the idea by employees, peers and the hierarchy. Finally, idea conversion is a process of both sensemaking and "intéressement" (Akrich et al., 2002a) that creates collective meanings in connecting the idea to the knowledge bases and values of actors that could be involved in supporting and contributing to the idea. At this stage of the ideation process, we must identify the active units in the idea-generation and conversion processes. Generating and converting ideas is essentially a socio-cognitive process and construction. If the original spark is more than often individual, the first validation and valuation of the idea comes from a small, situated group of informal "partners in crime", invited by the first "ideator" to react, comment and contribute to the idea.

At the next step, when an idea reaches a sufficient degree of maturity (i.e., there is an understanding of its possible functioning and potential value) and is validated and supported by the hierarchy, the question at stake is its *execution*. Executing an idea entails organizing its "landing" in pre-existing structures and processes. Hierarchy has a fundamental role to play in giving the "green light" to an idea when it reaches a certain level of ripeness. Officially endorsing the idea and starting a formal innovation process means keeping up with the enrichment, concretization and valuation of the idea. The idea will benefit from internal as well as external contributions, consciously channelled, managed, evaluated and selected by management. Differing from the vision and metaphor of the innovation "funnel", ideas should not be considered only as quasi-material inputs to feed the innovation process. In this regard, many innovative projects have encountered difficulty – when taking a sequential perspective – in recognizing, evaluating, transferring and exploiting the new pieces of knowledge generated from the process. Generally, these insights are at worst forgotten, or at best recaptured in complex intellectual property models,

to be eventually franchised to external actors. Focusing on the idea-generation, conversion and execution process allows emphasis not only on the expected *outputs* (i.e., the deliverables and their exploitation/valuation model), but also on the *outcomes* (i.e., the potentially useful knowledge produced from the exploration/experimentation process itself). Hargadon and Sutton (2000), for instance, in analyzing the specific internal functioning of IDEO, the world-renowned design firm, insisted on the contribution of those "secondary" ideas to the sparking and fueling of new innovative initiatives and projects. Crutzen et al. (2014) came to a similar understanding through their analysis of a creative consulting firm, where the accumulation of knowledge through experience in often-failed endeavours nurtured the success of subsequent projects.

In the following section, we introduce a framework for idea management based on this vision of an ideation process. Table 13.1 synthetizes the components and activities involved at the four stages of the idea-development process. The starting point is to acknowledge that the ideation process in organization should be considered as an unfolding, open-ended process that needs to be managed in four main steps: 1) intention building, 2) generation of the idea, 3) conversion of the idea (i.e., looking for its consolidation and validation/valuation) and 4) execution of the idea through the mobilization or organizational resources and processes. The activities at the four stages differ significantly. The first and second stage are mostly exploratory and aim at generating new insights through knowledge association and recombination. They can involve free exploration or a more disciplined approach using specific methods. The third stage is essentially social and aims at convincing other actors to contribute to the validation and consolidation of the idea. The fourth stage aims at translating the idea into a value proposition relevant for the organization, to convince the hierarchy to endorse the idea, and to reformat organizational structures and processes to support the actualization of the idea.

Ideation process generates formal ideas that nourish the process of innovation. However, the innovation process does not necessarily use all the ideas, but often ideas are rejected or stay in the ideation process for refinement in order to build a more robust concept. The challenge is thus to find the right method to evaluate the idea and to identify a way to store the ideas not used by the innovation process. Dean et al. (2006) identified the four most important criteria: newness, feasibility, relevance, and the specificity of the ideas. The newness of an idea can be estimated from its degree of originality and its paradigm relatedness. The feasibility of an idea can be estimated from its social acceptability and the technical and organizational ability to implement it.

The relevance of an idea can be estimated from its applicability to the problem and its effectiveness in solving the problem. The specificity can be estimated from its implicational explicitness and the completeness of its description. However, in organizations, the technical feasibility, market potential and product uniqueness are the most frequently used criteria (Hart et al., 2003). In fact, these criteria are dependent on the phase of the innovation process. In the concept-testing phase, the strategic fit and the customer acceptance are the most important criteria to evaluate the ideas (Carbonell-Foulquié et al., 2004). Finally, separating the idea generation and idea evaluation can be counterproductive to actually generating value from the idea for the organization. The evaluation, or more precisely the valuation, is a generative process that shapes and guides collective and organizational creativity (Harvey and Kou, 2013).

Harvey and Kou (2013) show that, in creative sessions, the evaluation-centered process, moving from parallel to iterative/sequential interactions, allows the creation of more elaborated ideas. In the iterative mode, when the group moves back and forth between ideas and group goals, the group often combines multiple ideas, refines the problem framework, and validate or invalidate the ideas in light of this framework. In communities, the ideas are often evaluated by the peers and combined before getting adopted by a larger number of members. Creative and knowing communities appear as efficient social groups to evaluate the ideas. Their fundamental role in organizational creativity shouldn't be overlooked and should be integrated into the reconsideration of the stage-gate process.

The trajectory of ideas in organizations is not a smooth process. Each step presents some risks that the idea will not get validation and will be rejected. Before becoming a concept, an idea can go through many back-and-forth movements: checking an insight, re-evaluating a hypothesis, exploring a way through prototyping, starting again from a different angle and so on. During this process, the original question is often re-examined, debated and reframed. The socialization of the idea often fosters the evolution of the initial concept, combined with other elements of knowledge, and can sometimes lead to a major reformulation of the problem. The result of the ideation process is uncertain and unpredictable. Sometimes, the individuals and the creative groups generate a lot of interesting and valuable ideas in a burst of inspiration, but at other times long periods can pass without a significant idea. Managing this process with a traditional hierarchical management, a formal project mode and a linear perspective can prove ill-adapted and counterproductive.

The four-stage process is aligned with Teece's interpretation of a firm's dynamic capabilities for innovation (2009), where the first issue for the organization is to generate some relevant insights, then to assess their value and select the most relevant one, and finally to reformat the idea as a formal project that must be implemented in the pre-existing set of organizational resources and processes, thus reconfiguring the organization to allow for the concrete development and actualization of the idea as a new product, service or process. Mastering the ideation process is probably a robust way to build creative capabilities to support the dynamic capabilities of a firm. However it is not sufficient because the ideation process is in interaction with both the innovation process and the knowledge-management process. Managing innovation therefore means setting up and balancing those three families of processes.

MANAGING THE TENSION BETWEEN THE IDEATION AND INNOVATION PROCESS

Questioning the Sequential Perspective

Whatever the complexity of the ideation process, the traditional view in management is a "sequential perspective" which places the ideation process at the initial stage of the innovation process. This view for instance is clearly implicit in the recent and growing literature on the "fuzzy front end" (Koen et al., 2002). This stream of research argues that in the process of development of innovation in organization, the earliest phase, the fuzzy front end, is chaotic, unpredictable and insufficiently structured, and thus offers significant opportunities to improve the overall efficiency of the management of innovation. In contrast, when decomposing the innovation process within organizations in three main phases from upstream to downstream (the fuzzy front end, new product and process development (NPPD), and commercialization), the last two phases appear as well structured and formalized (through well-known procedures such as stage-gating). The fuzzy front end is precisely the phase of emergence and construction of ideas, which requires informal exchanges between peers, interactions between a diverse set of knowing communities, absorptive capacities to capture ideas from the environment, and the recognition that these exploratory activities cannot occur in a specific order.

The traditional vision in management approaches new ideas as preformatted "black boxes" (which can come either from outside or inside of the organization) containing well-described pieces

of knowledge. What matters for the organization is the potential economic value of the new ideas. These hypotheses on value guide the selection procedures of managers at each step of the stage-gate process (Cooper, 1990).

In practice, the first stage, the pre-conception stage (or fuzzy front end), is dedicated to the process of idea generation and construction. More precisely, in the traditional view, this first step generally aims at gathering the maximum number of ideas (using methods such as brainstorming). At the end of this phase, ideas are put in competition with each other: "no go ideas" that are not mature enough are generally discarded, and only a small number of "go ideas" pass the various gates before being transformed into some innovative output for the organization. The ideas that are not selected are definitively discarded, and forgotten. Then, through a sequence of stages and gates, an irreversible process of reduction of the variety of available options starts: the process of innovation per se follows different phases (conception, prototyping, demonstration, production, etc.). Even if this approach proved its efficiency in terms of control of costs and respect of deadlines, it has, with regards to creativity, severe drawbacks: it aims at concentrating "thematic" creativity at the early stages of the process and discourages significant creativity at the later stages. With regard to ideas evaluation, the classical stage-gate process entails two major risks: the first risk is to definitively discard an idea that did not seem mature enough at the moment of the decision, but that eventually would have had the potential of being a real breakthrough after additional enriching work and feedback. The second risk is to select and commit to an idea that eventually will prove to be a poor one. Often, in such cases, it is too late to reconsider a process that has taken an irreversible path.

To some extent, it is as if, at the end of the so-called fuzzy front end, once the process of ideation comes to the gate, that ideas lose their creative power, and cannot be further developed or integrated with other ideas. Moreover, this sequential perspective implies that, once the process of ideation comes to its end, there is no possible feedback and mutual cross-fertilization between the parallel building of ideas and the process of innovation. In this view, for instance, the implementation phase of innovation does not necessitate new ideas. It is also admitted that none of the lessons learned or none of the creative inspirations that emerged from day-to-day management of projects can contribute to nurture the ideation processes. Through this approach, many potentially creative ideas, which did not have time to mature, are definitely eliminated. In other words, the risk of killing creativity in pursuit of short-term efficiency is high.

For all these reasons, our view is that the sequential perspective should be strongly questioned and challenged: the creation of complex and radical innovation requires solving problems with creative ideas at all phases of the innovation process. Thus, instead of viewing the management of ideas as an initial stage of the innovation process, we propose an integrated framework where the processes of ideation and innovation are not sequential but parallel and coupled (Figure 13.1). We argue that the ideation and innovation process are intertwined, and that ideation process nourishes the innovation at all stages of its conception and the innovation process fosters new questions and generates new ideas. For example, in creative industries (Pixar, Ubisoft, Google, etc.), the two processes clearly run in parallel; they constantly mutually feed each other: "Exploitation and exploration tend to be unfolded in an organically intricate and complementary way where they constantly fuel each other" (Cohendet and Simon, 2007). This raises challenging questions for management.

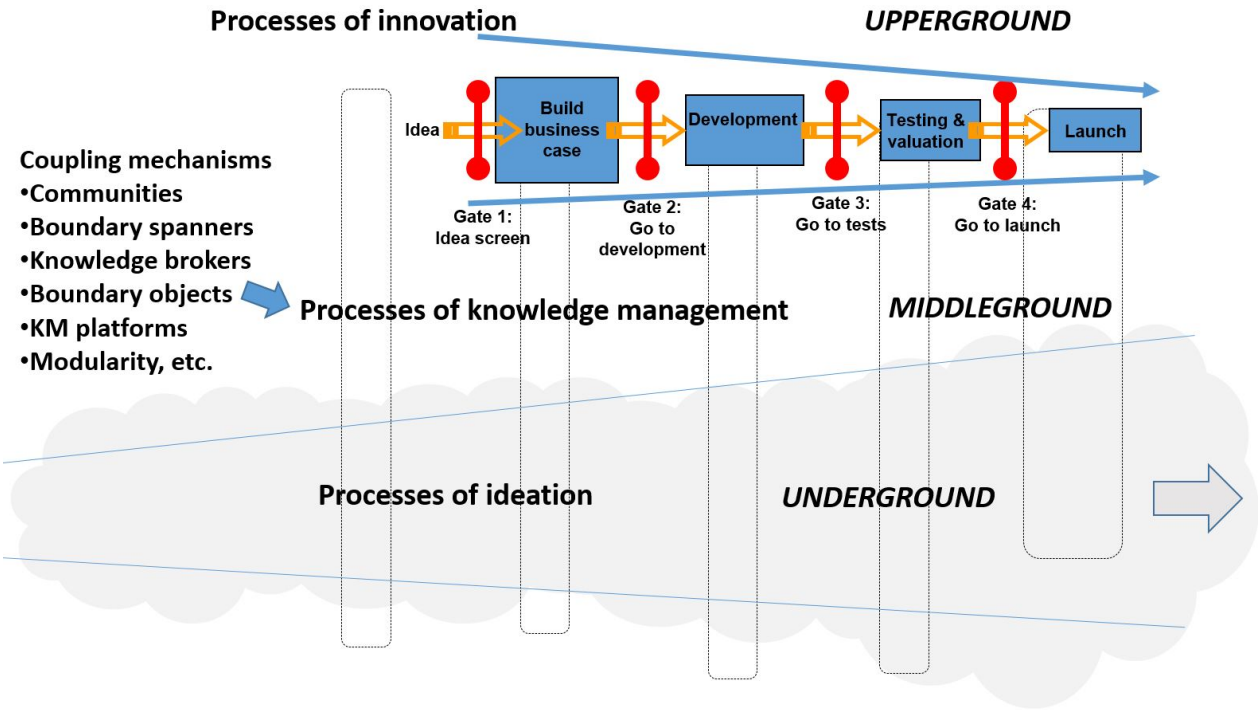

Figure 13.1 Coupling processes of ideation and processes of innovation

The Role of the Manager in Coupling Ideas, Knowledge and Innovation

In this dynamic view, managers must orchestrate the link between the ideation process and the innovation process to ensure the implementation of sustainable creative processes in the organization. These main processes need subtle coupling and decoupling activities with the knowledge-management process. During the intention phase of ideation, the tacit and formal knowledge are necessary to bring out the problem and questions. At the spark phase, idea generation is fed by different frames of reference. The idea itself carries an amount of explicit and tacit knowledge. The ideation activity requires an environment where tacit and formal knowledge, from different frames of reference, circulate freely and are in perpetual evolution, collision and recombination. Here, the main challenge for knowledge management is to ensure a dynamic relationship between two heterogeneous processes: ideation and innovation. On the one hand, processes of ideation are often informal, merely divergent and somehow chaotic, which implies that the classic means of control, such as contractual schemes of incentives, are mostly irrelevant. On the other hand, classic innovation processes, which are based on project teams and consequently mostly managed by the hierarchy, focus on the convergence on value generation and actualization. These are mostly formal, sequential and linear processes. To be consistent, the dynamic of these creative powerhouses supposes that both processes are to be constantly mutually enriched. This role mostly belongs to management, who are in charge of implementing various socio-cognitive transversal practices and processes to harness the idea generation dynamic to innovative projects. In the wide array of options possible, we can mention encouraging boundary spanners and knowledge brokers, designing technical cognitive platforms, and fostering and supporting communities. In other words, looking at the active units of ideation, to deal with coordination issues in innovation processes, managers usually have to articulate the interactions between creative individuals and collectives, formal project teams, and the hierarchy. To integrate the parallel ideation processes, we suggest taking into close consideration another type of active unit: knowing communities.

Knowing communities appear to be one of the most efficient socio-organizational devices for knowledge creation validation, and circulation. Their role as a source of creativity for the firm is becoming widely acknowledged in the literature (Brown and Duguid, 1991; Amin and Roberts, 2008; etc.). These communities take multiple forms: epistemic communities, communities of practice, communities of creation, communities of innovation, occupational communities, user

communities and brand communities. Harvey et al. (2015) bring together these communities under the umbrella term of *knowing communities*. Knowing communities share, challenge and assemble bits and pieces of knowledge around a common object of interest, be it a practice, an emerging paradigm or the construction of a new frame of understanding in a creative field. They act as an active repository of cognitive and practical resources that feeds not only the exploratory capabilities of the firm, but also its exploitation activities. Creative processes may emerge from the negotiation between competing interests of different groups and communities within the organization (Drazin et al., 1999). These communities can be within the firm with external links such as the occupational communities of Ubisoft (Cohendet and Simon, 2007; Harvey et al., 2015) or outside the firm with internal links such as user communities (Jeppesen and Frederiksen, 2006; Parmentier and Gandia, 2013). Communities use coat-tailing mechanisms for coordination and cooperation which align individual actions and collective activities (Hemetsberger and Reinhardt, 2009). What matters for agents involved in these ideation processes is the recognition of their contribution to the building of ideas (reputation), and intrinsic motivation.

Essentially, nurtured by the creative communities, the fundamental element of the ideation process is the building of a creative reservoir. Ideas are circulated between the members, bisociated and combined, and are sometimes stored in prototypes, tinkering, formal concepts or just dormant insights. The remarkable characteristic of the process is the formation of a creative reservoir viewed as a "repertoire of creative opportunities" that contributes by guiding the choice of future projects for the growth of the firm. The creative reservoir is shaped by the culture of the firm and is essentially understandable through the jargon of the organization. This parallels the analysis of Penrose, in which previously utilized managerial resources become "slack", and these "unused productive services are, for the enterprising firm, at the same time a challenge to innovate, an incentive to expand, and a source of competitive advantage" (Penrose, 1959). In line with Penrose's vision, the firm that has accumulated a creative reservoir is better prepared than any other organization to derive a benefit from the creative potential of the reservoir. Because of these idiosyncrasies, it is much cheaper to valorize the reservoir *within* the firm that holds it than through any other organization (including through any isolated communities). Some may argue that the creative reservoir appears as a *cushion of redundancy* that is costly to maintain. The specific conditions of formation of the creative reservoir in creative companies rely on the functioning and interactions of quasi-autonomous communities that naturally produce and conserve the knowledge

in their domain of specialization at negligible costs. They offer strong guarantees of the efficiency of maintaining the creative reservoir at low costs. The reservoir is not “possessed by the firm”. It is essentially “delegated” to the communities. The challenge remains for the management to recognize the potential of this reservoir, to activate its exploration, and to channel its exploitation. This strongly pleads for a profound reconsideration of the role of the managers with regard to the coordination, balancing and integration of the parallel processes of ideation and innovation. In particular, a specific attention should be given to the role of knowing communities and the dynamic interactions between them, and to more formal processes, such as project management and stage-gating. Innovation management could be redefined not only as the mastery of innovation projects, but also as the development of specific capabilities in ideation management and community management. This opens an extremely rich research agenda for academics and practitioners alike.

Table 13.1 Untangling the idea-development process

	The intention	The spark	The social construction	The landing
Focus	Goal definition	Idea generation	Idea conversion	Idea execution
Active units	Individuals	Individuals and informal groups and communities	Social group Knowing communities	Organization Hierarchy Formal Project
Main activities	Identification of problems, incidents, surprises, irregularities, singularities, etc. • Monitoring • Information searching • Responses to organizational solicitation	Looking for insights • Creative session • C/K method • Design thinking	"Intéressement" and sensemaking • Sharing the idea • Looking for allies • Seducing • Convincing • Valuating • Building legitimacy	Sensemaking • Translating the idea into a value proposition for the organization • Actualizing value hypothesis
Cognitive artifacts	Existing knowledge and experience Creative brief	• Post-it sessions • Mood board • Mind maps • Empathy maps • Value analysis • C/K diagram	• Manifesto • Codebook • Boundary objects • Prototype	• Evaluation criteria • Value proposition • Business model
Cognitive activities	Serendipity	Bisociation Effectuation Divergent thinking	Identity construction Value construction	
Organizational activities	Sensing	Combining Bisociating Valuating	Seizing	Seizing and reconfiguring

CONCLUSION

We have suggested in this contribution that managing the coupling between ideation processes and innovation processes is a central issue for firms under a growing pressure to innovate. While our observation is that firms belonging to the so-called creative industries are already engaged in such new forms of organization, it appears more challenging for traditional firms that are presently historically focused on conducting traditional innovation processes.

What has been learned from the careful observation of firms belonging to the creative industries (Cirque du Soleil, Pixar, IDEO, Ubisoft, etc.) is that managing this coupling implies a reconsideration of most of the principles and practices of management, impacting human resources management, project management, intellectual property and so on. We address hereafter some examples.

From a human resources management perspective, most of the employees of these firms process knowledge with a dual orientation, aiming both at exploration and exploitation. On the one hand, in their day-to-day current (exploitative) activities, they work in a given innovation process with classical responsibilities and tasks determined by the hierarchy of the firm. On the other hand, they also interact with members of their community of specialists and engage in regular and continuous meetings, discussions or exchanges on social networks, sensing and seizing (exploring activities) the new trends, new technologies and new modes of usage that will influence their domain of expertise. They have “one foot” in innovation processes (exploitation) and “one foot” in ideation processes (exploration). As a result, their incentives are twofold: on the one hand, classical incentives based on performance in the conduct of innovation processes; on the other hand, reputational incentives based on their involvement in their creative endeavours and interaction with knowing communities. The implications for the human resources department are, for instance, to conceive specific dual mechanisms for motivating, recruiting and rewarding employees.

From the perspective of project management, a reconsideration and reconfiguration also seem necessary. Project management in creative industries shares common features with classical project management styles in more traditional industries, but also exhibits some specific traits in order to nurture the fundamental creativity in these industries. As an example, in the domain of the video game, Cohendet and Simon (2007, 2015) observed that the form of project management

relies on the design of two hierarchical dimensions: a common cognitive architecture of the project (the "script", the "scenario", the "shared vision" or "shared meaning") and the definition of the associated standardized component interfaces (codified prescriptions and constraints to be respected by the participating groups). From this hierarchical structure, each component can be designed independently and simultaneously by a specialized team or community, which can express creativity provided that it respects the standardized interfaces. The *script* is the cognitive reference that glues together the different *communities of specialists* that work in modules specializing in the different domains of knowledge related to a video game project. Modules use different pools of knowledge, specific jargons and specific understandings of the project requirements (Langlois, 2002), which rely on different specialized generic skills (game design, level design, 2D and 3D graphic arts, various levels of software programming and integration, sound design, tests, etc.). The consequences of this are that project management needs to focus at the same time on 1) the script definition and the coordination of engagement of different communities around the script; 2) capabilities development inside each distinctive community of specialists engaged in multiple projects and with other internal and external communities.

In terms of management of property rights, while the conduct of innovation processes requires traditionally strong classical property rights (patents, licenses, etc.), the conduct of ideation is more subtle and calls increasingly for new forms of property rights such as creative commons, that recognize who is at the origin of the idea, but which are more flexible and less costly than traditional rights in a creative context (see for instance Pénin's chapter, Chapter 12, in this volume).

To sum up, many dimensions of management are challenged in order to cope with the coupling of ideation and innovation processes. As said above, if these new forms and practices of management could be observed in the creative industries, we posit that in the long run all traditional industries and firms will have to consider adopting such practices and rules. There are already numerous experiences carried out by companies such as Procter & Gamble, Philips, Whirlpool, Renault, Decathlon, that are developing various forms of platforms and informal communities to facilitate the coupling of ideation processes and innovation processes. The fundamental issue at stake for companies is the ability to reconcile efficiency and creativity for sustainable innovation.

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