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« Schumpeterian entrepreneurship and ideation processes »

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Document de Travail n° 2026 – 05

Février 2026

Bureau d'Économie
Théorique et Appliquée
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Schumpeterian entrepreneurship and ideation processes[1].

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Strasbourg February, 10th, 2026

Abstract

This chapter aims to address the paradoxical portrayal of entrepreneurs in the Schumpeterian tradition. While entrepreneurs are portrayed as key players in economic development in Schumpeter's early works, they essentially disappear in neo-Schumpeterian literature, where their role is replaced by 'routines' as the primary operational component of organizations. This chapter re-establishes the entrepreneur as a producer of ideas, as well as an initiator and orchestrator of creative destruction, by reintegrating what we consider to be the primary "function of entrepreneurship": generating and proposing new ideas and introducing novelty into the economic system. From this perspective, we argue that ideas, viewed primarily as processes, are the essence of the Schumpeterian entrepreneur's role at the core of the 'entrepreneurial function', which orchestrates the ideation process by attracting, mobilizing and aligning allies around their vision. This entrepreneurial function takes different forms — from the 'heroic' entrepreneur of early capitalism, to a more 'depersonalized, routinised and automated' entity within large organizations, and, more recently, to an orchestrator within an innovative ecosystem.

Keywords: Schumpeter, Creativity, Ideas

Code JEL: B15, L26, L21

Since at least the 1980s, the two authors' reflections and publications have been intertwined with the research and contributions of members of the International Joseph A. Schumpeter Society (ISS). These contributions have been regularly presented and/or discussed at ISS conferences (from Kyoto onward) and have attempted to redefine firms' organizational structures from a knowledge-based perspective (Cohendet & Llerena, 1999) to a more recent idea-driven approach (Cohendet et al., 2025).

[1] We thank our colleagues and sometime co-authors for the numerous discussions and suggestions on related topics: Sophie Bollinger, Rémy Guichardaz, Raouf Naggar, Julien Pénin, Romain Rampa, Laurent Simon and many others. Patrick Llerena thanks also the Chair « Management of Creativity », funded by the Fondation Université de Strasbourg » for financial support.

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Our contributions to the literature on the economics of firms and innovation have also been greatly influenced by our membership to BETA, our research unit in Strasbourg, and the memorable encounters we had there in the 1970s and 1980s[4]. These encounters ranged from the presence of Nicholas Georgescu-Roegen and Axel Leijonhufvud in the 1970s to Keith Pavitt and Giovanni Dosi in the 1980s. We then collaborated in Europe with Franco Malerba, Nick von Tunzelman, Bengt Åke Lundvall, Luc Soete, Ed Steinmüller, Robin Cowan, and many others. We also collaborated across the Atlantic with R.R. Nelson, S. Winter, D. Mowery, N. Rosenberg, and B. Kogut, among others. Our trajectories naturally led us to the ISS. Under the guidance of our late and much-missed colleague E. Zuscovitch, we began to engage in ISS activities, starting with the meeting in Vienna. One of the purposes of the chapter is to demonstrate the profound connection between our research and Schumpeter's vision of the entrepreneurial function as a driving force of economic dynamics[5].

The paradoxical treatment of entrepreneurs in economic theory—particularly within the Schumpeterian tradition—has long intrigued us. While the entrepreneur is portrayed as a central actor of economic development in Schumpeter's work (Schumpeter, 1934), he basically disappears in the neo-Schumpeterian literature, where the role is effectively replaced by "routines" as the core operational component of organizations. This chapter aims to re-establish the entrepreneur as a producer of ideas and initiator and orchestrator of the creative process, in a very specific way.

The "entrepreneur": A paradoxical figure?

In Cohendet et al. (2000), and later in Cohendet and Llerena (2010), we consider the paradoxical status of the "entrepreneur" and offer a preliminary exploration of its roots. We propose two main explanations. First, Schumpeter ("Schumpeter Mark I" in *The Theory of Economic Development*, 1934) initially emphasized the "heroic" role of the entrepreneur as an innovative agent who disrupts the equilibrium of circular flows. Over time, however, he ("Schumpeter Mark II" in *Capitalism, Socialism and Democracy*, 1942) became primarily concerned with large firms, in which innovation becomes routinized and economic development becomes gradually depersonalized and

[4] See Cohendet and Llerena (2007) for a detailed history of the Bureau d'Économie Théorique et Appliquée.
[5] This also explains the numerous references to Schumpeter and to our own publications.

automated (Cohendet et al., 2014). Second, neo-Schumpeterian authors drew a strong parallel between their economic vision of evolution and other evolutionary frameworks in which no specific agent or hierarchy is responsible for regulating the evolutionary process.

Our initial explanation requires significant qualification. While the distinction between Schumpeter's "Mark I" and "Mark II" is relevant for an analysis of industrial dynamics (Malerba & Orsenigo, 1996; Malerba, 2026), it is difficult to assert that it is explicitly reflected in Schumpeter's own writings.

According to Langlois (2002, 2026), the "two Schumpeters" thesis—as widely accepted in the Anglo-American literature on technological change—is incorrect. The idea that Schumpeter's fundamental ideas on entrepreneurship were influenced by his observations of large U.S. firms after 1931 is equally wrong. On the contrary, his thinking remained remarkably consistent from at least 1928 (three years prior to his arrival in the U.S.) until his death (Langlois, 2002, p. 2). In fact, Schumpeter simply observed the evolution of capitalism from an early stage to a later stage—from a capitalism dominated by the emergence of new industries to a capitalism dominated by large companies with stable hierarchies and strong market power.

More recently, Guichardaz and Pénin (2025) reached a similar conclusion regarding the coherence of Schumpeter's thought, highlighting the "persistence of the individual and energetic entrepreneur as the sole source of development" (p. 685). From 1911 to 1947, the Bergsonian view of the "creative personality" as a source of novelty is evident in Schumpeter's work.

Nevertheless, there is a discernible evolution in Schumpeter's conception of the entrepreneur. As Becker et al. (2011) note: "The most profound change in Schumpeter's conception of entrepreneurship is the depersonalization of his earlier entrepreneur, the strong individual with almost superhuman willpower. From focusing on the individual entrepreneur, Schumpeter now discusses entrepreneurship as a depersonalized function not associated with any person" (p. 11). As early as the 1920s—particularly in Schumpeter (1928)—Schumpeter proposed a "scientific analysis of the economic subject 'entrepreneur'" (p. 245) and developed the major characteristics of the entrepreneurial function (p. 247). Understanding the various ways in which this function may be performed is therefore key to grasping the transition toward a depersonalized conception of the entrepreneur.

More precisely, this chapter aims to overcome this paradox by reintegrating what we see as the primary function of entrepreneurship: the generation and proposal of new ideas, and the introduction of novelty into the economic system.

Our second explanation of the paradox relates to the evolutionary approach, itself. It is important to note that an economic interpretation of the evolutionary process cannot be purely evolutionary. Rather, it must also consider hypotheses about the cognitive capabilities of agents. Without these considerations, an evolutionary economic theory of the firm is subject to significant uncertainty, especially concerning the selection of routines, the trade-off between exploitation and exploration, and the emergence of new business concepts that may influence the firm's internal and external environments.

These considerations underscore the need for an evolutionary theory of the firm that explicitly incorporates an entrepreneur endowed with the cognitive ability to strategically manage the adaptation, integration, and reconfiguration of internal and external organizational skills, resources, and functional competencies in response to changing environments. In the absence of such an agent, there is no clear explanation for how the firm operates its internal selection mechanisms and shapes relevant routines. This would lead to the selection of routines being determined solely by external mechanisms. As Loasby (2007, p. 1096) observes, members of an organization may have difficulty questioning their established routines. Consequently, "any deviation arouses opposition, which must be overcome by any entrepreneur despite the extraordinary difficulties of innovation and the internal resistance of his own mental processes" (Schumpeter, 1934, pp. 84–87). Beyond this fundamental role, there is also a need for an innovative agent to prepare and shape the cognitive processes leading to novelty—by building or imagining new business conceptions—and actively manage the evolution of the firm's knowledge base. Activities such as disrupting economic equilibrium, generating insights that no one else has, and initiating discovery and creative processes that are otherwise unknown to other market participants cannot be satisfactorily accounted for within a purely evolutionary approach.

All of the above reasons call for a thorough reinterpretation of the role of the entrepreneur within evolutionary theory. We therefore propose to align this role with Schumpeter's original vision, according to which the main function of the entrepreneur is to inject new "combinations" (to use the Schumpeterian term) to generate a "creative response" (Schumpeter, 1947), and to engage in a process of "creative construction" (Schumpeter, 1911).

Gemmell et al. (2012) note that innovative entrepreneurial firms originate from creative ideas (Amabile et al., 1996). The view that ideas constitute a central driving force of entrepreneurship is often traced to Schumpeter's notion of "creative destruction," which he used to describe economic growth through innovation (Schumpeter, 1942). However, it is more appropriate to refer to Schumpeter's original formulations of "creative construction" (Schumpeter, 1911) and/or "creative response" (Schumpeter, 1947). Indeed, many firms have been born from a single idea brought to life by an entrepreneur. Examples include Jobs and Wozniak with Apple, Page and Brin with Google, Bell with Bell Telephone, and Bombardier with Bombardier Aeronautics. In each case, entrepreneurs not only originated novel ideas but also brought them to market. From this perspective, Schumpeterian disruption may be associated with ideas that break with established norms. While creative ideas may seem commonplace, successful entrepreneurial ideas are in fact scarce and highly valuable (Stevens & Burley, 1997). Furthermore, the cognitive skills and methodological approaches through which successful—and especially serial—entrepreneurs generate such ideas remain poorly understood (Baum et al., 2007). Surprisingly little has been written about the ways in which entrepreneurs mobilize creativity to develop new ideas for important products and processes.

Our emphasis on "ideas" or "ideation" is inherently Schumpeterian. As early as 1911, Schumpeter emphasized the entrepreneur's ability to conceive and implement new combinations (see Schumpeter, 1911, Chapter 7, as cited in Becker et al., 2011, p. 122). The reintegration of an explicit entrepreneurial function thus offers a fruitful way to mitigate the paradoxical position of the entrepreneur in neo-Schumpeterian literature.

This chapter aims to establish ideas as the essence of the Schumpeterian entrepreneur's role at the core of the "entrepreneurial function," drawing on important literature emphasizing that, from an

economic perspective, ideas should be viewed primarily as processes. To this end, we first summarize the recent literature on ideas as processes. We then analyze how the role of the entrepreneur is inherently associated with the development of an ideation process from a Schumpeterian perspective. The final section provides a discussion and concluding remarks.

Ideas as processes.

In recent years, numerous articles in economics and management science have described ideas as the driving force behind innovation (Ananth & Harvey, 2023; Fleming et al., 2007; Perry-Smith & Mannucci, 2017; Phelps, 2013; Slavich & Svejenova, 2016). However, this focus on ideas is relatively recent. While ideas have long been acknowledged as part of the organizational innovation process—with innovation often described as the transformation of ideas into market offerings—they have rarely occupied a central position in theoretical discussions. As Romer (1997) argues: "Too often, economists have been willing to treat ideas as a footnote to the rest of economic analysis."

One reason for this limited conceptual attention lies in the way idea generation has traditionally been depicted in the literature: as a rare, almost magical moment experienced by a lone creator or a small, informal group, occurring only at the very beginning of an innovation project (Hua et al., 2022). However, more recent research has examined the nature of ideas more deeply (Cohendet et al., 2025; Gupta, 2018; Perry-Smith & Mannucci, 2017). For instance, Slavich and Svejenova (2016) contend that ideas should be regarded as ongoing processes rather than fixed assets. Similarly, Perry-Smith and Mannucci (2017) assert that novel ideas do not originate from a single individual at a single moment. Instead, they describe ideation as an open, evolving, and collective trajectory—an "idea journey"—rather than a sudden flash of inspiration. Within this framework, an idea emerges through the dynamic interaction of three core elements unfolding over time: (i) an intention to act, which shapes the initial conceptual direction; (ii) a cognitive construction phase, during which different types of knowledge are incorporated; and (iii) a landing phase, during which the idea materializes into a concrete, innovative process that must be supported and validated by a network of individuals who believe in its potential. Even when an idea is not immediately implemented or is ultimately discarded, it may still contribute to the organization's creative slack (Dupoët et al., 2024). Moreover, this ideation process may induce the evolution—or disruption—of existing production routines. The following paragraphs briefly elaborate on these main steps:

First, following the initial "moment of grace" (or "spark"), which typically emerges from an individual or small group, promoters explain how the idea is useful and novel and convey their intentions. Often, promoters create a script or manifesto that describes how existing rules should be broken—that is, which changes are needed to support and develop the new idea. Aside from establishing new rules, the manifesto aims to foster a shared vision, collective commitment, and will to collaborate. In this phase, promoters articulate a desired reality that does not yet exist and whose contours are not yet defined. Amabile (1983) refers to this as an "intention to act."

Second, for an idea to become economically viable, it must be endowed with multiple bodies of knowledge. Following the initial spark, this "cognitive construction of the idea" is crucial to the ideation process (Perry-Smith & Mannucci, 2017). The goal of this phase is to equip the idea with the necessary knowledge to become economically viable. Promoters therefore devote considerable time and energy orchestrating interactions with diverse and specialized sources of knowledge, reinforcing the initial idea with complementary inputs and progressively stabilizing its viability. Informal communities play a particularly important role in this process. Once nurtured through contributions from different communities, the idea reaches a "mature" state. At this point, it is given a "codebook"—that is, a grammar of use and a dictionary of objects and procedures related to the innovation—allowing the idea to enter the production phase (Cowan et al., 2000).

At this stage of social construction, the idea must achieve a degree of internal consistency and validity, as well as a minimum level of social acceptance. Therefore, it must be communicated to a wider audience. To attract supporters, the idea must be linked to relevant bodies of knowledge. To take shape, it must also explore multiple trajectories arising from diverse forms of knowledge and interests. Specifically, the idea must validate its underlying hypotheses, demonstrate its feasibility, and substantiate its value. In this process, the individuals who generate, support, respond to, and modify the idea—as well as the sociopolitical processes and controversies that surround them—play a crucial role in enabling the innovation to gradually emerge, develop, and stabilize (Akrich et al., 2002). This perspective aligns with Callon's influential framework of "actor–network theory" and the concept of "intéressement," or the ability to garner support and establish arrangements that render an idea acceptable to both human and non-human actors (Akrich et al.,

2002). Ideas that are poorly aligned with their context, insufficiently understood, or unable to convincingly demonstrate their value may be rejected, transformed, or put on hold until a more favorable context emerges (Grimes, 2018).

Third, once an idea has been socially constructed and equipped with a formal codebook and a network of supporters, it can be mobilized for innovative purposes. At this point, the ideation journey enters the landing phase, marking the transition from blueprints and prototypes to one of two main possibilities: (1) the idea is implemented through a reconfiguration of the organization's processes, thereby enhancing or generating innovation; or (2) if not applied immediately, the idea may nevertheless enrich the firm's existing repertoire of ideas, which Cohendet and Simon (2007) refer to as "creative slack." Creative slack encompasses ideas, insights, and forms of know-how that are deeply rooted in individuals' experiences and the cultures of the communities to which they belong.

Entrepreneurship and ideation processes.

By reinstating the ideas at the heart of the entrepreneurial function, we may better grasp the role of the creative process, entrepreneurial logics, and organizational dynamics. While the entrepreneurship literature has long debated whether opportunities are either pre-existing or socially constructed (Ramoglou & Tsang, 2016), equal attention must be paid to the way in which entrepreneurs implement ideas in response to opportunities and navigate increasingly unpredictable environments (Alvarez & Barney, 2020). The notion of "idea journeys" better explains phenomena such as discovery, gradual development in the face of uncertainty, and attempts to engage more stakeholders in building, validating, and legitimizing the value of an idea. In an idea-driven organization, entrepreneurial dynamism permeates the entire firm and is not confined to top management (Rampa & Agogué, 2021). Since ideas can originate anywhere within an organization, virtually any individual can act as an idea initiator, promoter, or ardent supporter. Regardless of whether ideas are initiated based on a strategic plan, deployed by specific organizational forms such as an R&D center (Alexy et al., 2012), or implemented by a few individuals without formal organizational support (Criscuolo et al., 2014), they require supporters and allies to gradually transform them into viable solutions. Within this distributed process, however, entrepreneurs retain

a unique and indispensable role: managing the ideation process through increasingly unpredictable environments and acting as equilibrators. From an evolutionary perspective, they help organizations overcome indeterminacy and align the visions and expectations of dispersed actors (Loasby, 2007, p. 1090).

Along the trajectory of the ideation process, the role of the entrepreneur exhibits different aspects:

In the *emergence phase*, the entrepreneur is not necessarily the original initiator— especially when the idea emerges from advanced scientific research requiring specialized competencies. However, many successful entrepreneurs possess the unique ability to recognize ideas with the potential to "change the world" and disrupt existing business models. In such cases, the entrepreneur may express their vision to find allies and take the next steps in the ideation process. According to Álvarez and Barney (2005), fundamental entrepreneurial competencies include disrupting the status quo, developing unique insights, creating processes unknown to other market participants, and shaking the economy out of equilibrium. The capacity to sense and identify promising emerging ideas thus constitutes a central entrepreneurial characteristic, applicable not only to radically new scientific ideas, but also to a broad range of opportunities.

The entrepreneur also plays an important role in detecting promising latent ideas within the organization and bringing them to fruition. As Loasby (2007, p. 1095) highlights, "In Schumpeter's analytical system, it is the combination of the present availability of what Cyert and March (1963) called 'organizational slack' and the threat of 'creative destruction' from another source of new knowledge (e.g., another large firm) if this 'slack' is not used for innovation—in Cattaneo's terms, a combination of intelligence and the will to preserve empire, fame, and fortune—that drives development in large firms." The capacity to listen to and interpret an organization's "weak signals" thus constitutes a key attribute of the successful entrepreneur. For instance, in his biography of Steve Jobs, Isaacson (2011) recounts numerous instances in which Jobs bounced ideas off Apple employees and successfully brought promising ones to market. Other well-known examples include the development of Gmail, the invention of Post-it Notes at 3M, and Toshiba's first lightweight laptop. In each instance, the projects originated as "underground" initiatives

developed by small groups operating within large, established companies and propelled forward by an entrepreneurial logic.

In the *social construction* phase, the entrepreneur plays a fundamental role in orchestrating the ideation process by attracting, mobilizing, and aligning allies around their vision. In doing so, however, they may encounter significant obstacles. Within a firm, idea bearers are simultaneously empowered and constrained by the existing configuration of skills, contracts, and commitments (Parker, 2011), and they must navigate political and organizational barriers in order to advance their projects. As the process unfolds, the bodies of knowledge mobilized around the idea and the network of supporters evolve alongside changing intentions. However, these interactions may challenge the original intention by confronting it with practical constraints and possible shifts in the business context. This dual dynamic—between intentions, knowledge, and networks of supporters—is central to the entrepreneurial process, revealing how novelty and innovation emerge within firms when entrepreneurs are able to navigate significant uncertainty and conflict. As Álvarez et al. (2020) note, a defining feature of the modern entrepreneur is the capacity to balance the often-conflicting interests of shareholders and stakeholders.

Although not all organizations use them, entrepreneurial logics can be applied to the incremental implementation of ideas within firms. For instance, Sarasvathy's (2001) concept of effectual logic illustrates how available resources can influence decision-making by enabling actors to explore multiple alternatives and implementation strategies. Whether in formally sanctioned projects or in bootlegging initiatives (Criscuolo et al., 2014), this mode of operation may significantly facilitate innovation.

Similarly, individuals may transform and act upon the resources at their disposal using a bricolage logic to make do with what they have in order to realize their ideas more effectively (Baker & Nelson, 2005). Finally, idea bearers may mobilize a "pivot logic" in response to insights and learning accumulated over the course of an idea's development, thereby improving the viability of their project and redirecting the original intention in light of different forms of feedback (Grimes, 2018). The extent to which such entrepreneurial logics are deployed may partly explain why some firms are more capable than others of rapidly bringing novel ideas to market (Berends et al., 2014).

In addition to these positive actions, the entrepreneur may also serve to abandon or deliberately "kill" ideas, allowing them to instead mature within the firm's creative slack. This selective function is consistent with the evolutionary need for agents capable of reducing indeterminacy and aligning the visions of multiple dispersed actors around a shared objective.

In the *landing phase*, the entrepreneur is confronted with the task of implementing artifacts that embody the new ideas (be these in the forms of products, services, or other types of new combination). It is at this stage that abstract ideas become "real," as they are exposed to users and potential clients, ultimately determining whether the expected (or unexpected) rewards materialize. At this stage, the entrepreneur must also secure contributions from partners and obtain support from users/adopters—or conversely, face rejection. This phase thus constitutes the so-called "moment de verité." At this point, it is difficult not to quote Schumpeter at length (Schumpeter, 1911, pp. 122–123):

> This is the masses. A minority of people with a sharper intelligence and with a more agile imagination perceive countless new combinations. They look at everyday events with more open eyes, and a wealth of ideas suggest themselves on their own. Many people belonging to this minority rescue enough freshness from the daily routine, allowing them to further pursue some of those ideas and give them concrete form. But that is not enough. (…) For the 'practitioner', excessive contriving of plans is considered a mental defect. Not without justification. Often, the only implication is that the static activity of such conjurers of plans is suffering. But at least they establish the preliminaries, the fruits of which they hardly ever will enjoy, though.
>
> Then there is an even smaller minority—and this one **acts[6].** It does not matter whether its members have conceived the plan of their activity themselves or have picked up one of the many plans that the just mentioned type is incessantly producing. You can always have the new combinations, but it is **the act and the force to act that is indispensable and decisive**. It is this mental constitution we sought to characterize earlier. It is this type that scorns the hedonic equilibrium and faces risk without timidity. He does not consider the implications a failure will inflict upon him, or care whether everyone depending upon him will lose their keep for old age. He does not care at all what his equals and superiors have to say about his enterprise, and his daily work has not left him without force and courage. And whatever his situation, whether he urgently needs further employment, or can abundantly satisfy all his needs—**he is tempted by the act**. The decisive moment is therefore energy and not merely the 'insight'. The latter is much more frequent, without leading to even the simplest act. What matters is the disposition to act. It is the ability to subjugate others and to utilize them

[6] Emphasis by the authors.

> for his purposes, to order and to prevail that leads to successful deeds—even without particularly brilliant intelligence (…)
>
> When someone gets started with a huge enterprise, all his assets, to the extent that they depend on him, will appear in a different light from before. This will extend even to others. For instance, who trusts our man and wants to cooperate with him, or who otherwise expects an advantage or disadvantage when he carries out his plan, will more or less change the valuations of his goods and his demand for other people's goods. This circle of people will often be large. This means nothing but the following: as soon as he gets to know about that plan and is affected by it in any way, he will orient his economic behaviour according to it, i.e., adapt more or less. The most important, of course, are the estimates of the ***man of action***, while the great mass of agents will behave passively also in this regard.

In this carefully articulated text, the entrepreneur emerges as the conductor of ideation processes, which we have analyzed across a variety of contexts and analytical approaches. The entrepreneur occupies a central position in the process of "creative construction" described by Schumpeter (1911) and later echoed in Schumpeter's (1947) elaboration of the notion of "creative response."

Imagine Schumpeter observing the modern innovation landscape.

Schumpeter was a meticulous observer of the evolving innovation contexts of his time. In the 1910s, he emphasized the "heroic" role of the small entrepreneur as an innovative agent who disrupted the circular flow of equilibrium. By the mid-1940s, however, his focus shifted to large firms with significant research and development departments, where innovation became increasingly routinized, and economic development more depersonalized and automated. Across this trajectory, Schumpeter traced the transformation of the entrepreneurial function. Given this, it is legitimate to ask: What key observations might Schumpeter offer about today's innovation landscape, and what role would he see for entrepreneur?

We argue that Schumpeter would likely focus on the concept of "innovation ecosystems" (Adner, 2006; Adner & Kapoor, 2010; Autio & Thomas, 2014; Gawer & Cusumano, 2014; Jackson, 2011; Jacobides et al., 2018; etc.). The innovation ecosystem perspective emphasizes collective value creation through the development and realization of new products, services, and technological projects. In this sense, an innovation ecosystem may be defined as "an evolving set of actors,

activities, artifacts, institutions, and relationships—including complementary and substitute relationships—that are important for the innovation performance of an actor or population of actors" (Granstrand & Holgersson, 2020, p. 1). Within such ecosystems, heterogeneous actors (e.g., companies, organizations, informal collectives, individuals) interact and collaborate to influence their environment, particularly through contributions to technological and organizational development (Adner & Kapoor, 2016; Granstrand & Holgersson, 2020; Kapoor, 2018; Yaghmaie & Vanhaverbeke, 2019). Accordingly, an innovation ecosystem may be viewed as an interconnected network of organizations and entities operating around a shared knowledge base and resource pool, particularly technological resources (Gifford et al., 2020; Grumadaitė, 2014; Jucevičius & Panetti et al., 2020).

Within such innovation ecosystems, the Schumpeterian focus would likely emphasize the orchestration of these systems—a topic that has gained increasing attention in the literature (Bittencourt et al., 2021; Souza et al., 2023; Valkokari et al., 2017; etc.). This approach foregrounds ecosystem governance and the need for an orchestrator capable of structuring interactions and ensuring alignment among diverse stakeholders through the allocation of roles, rights, and responsibilities. In this configuration, the entrepreneurial function would be effectively assumed by the orchestrator.

The growing porosity of industrial boundaries further illustrates this shift, as ecosystems enable the temporary mobilization of diverse actors from different industries around symbiotic relationships. As activities and relationships become more complex, value creation increasingly depends on new coordination methods that extend beyond traditional frameworks for the analysis of firms (Álvarez et al., 2020; Klein et al., 2019). Ecosystem construction, therefore, does not result from trade-offs between alternative modes of governance, nor from a simple hybridization of hierarchy and market. Rather, it emerges from multiple interactions among autonomous actors whose complementary activities promote the creation of relatively lasting links (Afuah & Tucci, 2012; Kogut, 2000).

On the other hand, the theory of innovation ecosystems emphasizes the development of governance models that encourage the generation and accumulation of knowledge and expertise from

unexpected sources (Cohendet et al., 2021). Innovation and creativity often occur on the fringes of formal entities. In this regard, the dynamics of vertical and horizontal interactions between formal entities (e.g., firms, research departments, public institutions) and informal entities (e.g., communities, informal collectives, individuals) constitute a critical source of co-creation, underpinning the depth of industrial dynamics (Cabral et al., 2019; Sarazin et al., 2017). These dynamics not only lead to innovative outputs (e.g., new products), but they also affect the nature of the participating entities, transforming them from informal to formal (e.g., companies, departments, business units), or vice versa.

Informal entities rely on communities for the creation and management of knowledge and skills (Cohendet et al., 2003; Cohendet & Diani, 2003; Cohendet et al., 2008). These communities may take various forms, including communities of practice, epistemic communities, communities of interest, virtual communities, and communities of experts. Regardless of their specific type, such communities fundamentally contribute to the dynamics of ecosystems at various levels. These contributions include the capitalization of best practices, collective problem-solving, the sharing of fixed costs associated with the development of new knowledge, and the creation and accumulation of knowledge around a shared corpus (i.e., disciplinary, technological, practical) linked to existing or potential uses. Beyond these functions, communities also serve as important sources of new ideas (Sarazin et al., 2017). As such, these organizational forms operate as genuine social networks, connecting individuals who voluntarily adhere to a common goal outside of formal hierarchical arrangements or established corporate structures.

From his primary opus (Schumpeter, 1911) to his later writings (Schumpeter, 1951), Schumpeter consistently maintained that the engine of economic dynamics and capitalist transformation lies in the “entrepreneurial function.” This function, however, adopts different shapes or modes—from the “heroic” entrepreneur of early capitalism to a more “depersonalized routinized and automated” entity within large organizations, and/or, more recently, to an orchestrator within an innovative eco-system. We would further argue that these different modes of the entrepreneurial function tend to co-exist at any given moment in history, albeit in varying proportions. Thus, the 19th-century industrial revolution was largely dominated by “Mark I” entrepreneurs, while also involving some early forms of “orchestrators” (see, e.g., Nuvolari, 2004). The 20th century, in contrast, was

characterized by the predominance of large corporations and their "routinized" research and development processes. Today, in the 21st century, entrepreneurial dynamics increasingly unfold within innovation ecosystems, where orchestrators coexist with "entrepreneurs" and start-ups.

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