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La gestión del conocimiento a prueba de los nuevos "objetos" de la
gestión del siglo XXI

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Word from the Guest Editors Knowledge management put to the test the new "objects" of 21st-century management

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The 21st century is seeing the rise of a large number of new "objects" of all kinds within, between and beyond organizations. These new objects are appearing on different continents, in Europe, the United States and Asia, in emerging countries and in countries with strong industrial traditions. New practices, both formal and informal, new management tools and devices, new technologies, but also new philosophies of organization and society are emerging and profoundly changing the managerial landscape.

It's an endless list that could be drawn up by naming them in alphabetical order: After Work, Aigo Café, Big Data, Blockchain, Blue Economy, Club Open Innovation, Coaching, Creative Community, Epistemic Community, Community of Practice, Innovation Community, Community of Interest, Virtual Communities, Citizens' Climate Convention, Deep Learning, Design Thinking, Digitalization, Hybrid Forum, Collaborative Economy, Circular Economy, Liberated Enterprise, Co-Working Space, Management of the Commons, Intergovernmental Panel on Climate Change, Co-Development Group, Hackathon, Hackerspaces/Makerspaces, C/K Model, Jugaad Innovation, Internet of Things, Learning Expedition, Living Lab, Fab-Lab, Middle Ground, Local Currency, Open Lab, Open Source, Cognitive Platform, Enterprise Social Network, Empowerment, KM Service, Smart City, Ecological Third Places, Wiki... In addition, a number of events are being organized by employees from a wide range of public and private institutions, who organize regular exchanges on the successes and failures of innovative initiatives.

New collaborative spaces are challenging traditional organizational boundaries and management practices (Bootz and Lievre, 2023; Bootz *et al.*, 2023; Bootz, 2015; Cohendet *et al.*, 2006; Cohendet *et al.*, 2010; Wenger, 1998; Wenger *et al.*, 2002). Additionally, the exponential growth in digital technology usage is driving profound transformations with long-term effects that are challenging to predict. Moreover, new organizational philosophies are emerging, sowing the seeds for fundamental changes.

Simultaneously, new paradigmatic and theoretical frameworks have emerged since the 90s to account for a historical evolution of capitalist economy: from a mass production economy (1950-1975) to a quality economy (1975-1990) towards a knowledge economy (Foray, 2004). This economic evolution is accompanied by corresponding changes in management practices, as each stage corresponds to a new organization of the firm linked to a specific form of management (Cohendet, Simon, 2017; Lievre, Coutarel, 2012).

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The transition is marked by a shift from an industrial society based on capital and labor to a post-industrial society where knowledge is the primary resource (Drucker, 1996). The deeply transformed firm becomes a knowledge processor (Cohendet, Llerena, 1999) and even an idea processor (Cohendet, Simon, 2017). Management, once rooted in command and control, increasingly relies on support and trust in employees (Hamel, 2008). This marks the emergence of a new management paradigm, as suggested by Clark and Clegg (2000).

Proposals are put forth to distinctly differentiate this knowledge economy, marking a radical departure from the industrial economy (Foray, 2009). Intangible capitals surpassing tangible capitals in countries' economic growth underscore the pivotal role of knowledge in value creation. A socio-technical rupture occurs with the advent of computers and web-based remote communication, altering our relationships with knowledge in terms of accessibility, cost, time, and space. As Michel Serres (2009) expresses, this revolution is equivalent to those witnessed with writing and printing. A new business paradigm emerges where innovation is imperative to maintain competitive positioning. Every company, regardless of size or sector, is obliged to submit to a regime of intensive innovation (Hatchuel and Weil, 1999; Amin and Cohendet, 2003; Foray, 2009), requiring the initiation of spirals of creative knowledge (Nonaka, Takeuchi, 1995). Broadly, all organizational activities become knowledge-intensive, challenging existing knowledge and skills and compelling actors to engage in a process of widespread knowledge expansion. These knowledge expansion processes rely not only on scientific and R&D-based knowledge but also on experiential knowledge acquired by operators, known for its fundamentally implicit nature. The ability of organizations to combine these two distinctly different types of knowledge becomes a critical capability (Amin, Cohendet, 2003; Foray, 2009).

This capacity is tested to address conjunctural events like the Covid-19 pandemic and structurally during the ecological transition as a response to the Anthropocene (Beltramello, Bootz, 2021; Bonneuil, Fressoz, 2013). A new discipline emerges in management sciences: knowledge management. Nonexistent in the 1990s, it now accumulates thousands of articles each year within the management field (Lievre, Landivar, 2018). Over the period, 27 new specialized journals will emerge, some of which have already become references in academic literature: Journal of Knowledge Management, Journal of Intellectual Capital, Knowledge Management Research and Practice, The Learning Organization (2017, Serenkos, Bontis).

The theoretical foundations are extremely diverse due to the complexity of knowledge and the variety of disciplines involved. The semiotic triangle (Shannon, Barthes, Eco), where knowledge is a contextualized meaningful message transmitted to a receiver, forms the basis for a heritage approach to knowledge in organizations (e.g., Ermine, 1996, 2018). The epistemological work of chemist Michael Polyani (1966), documenting the relationship between implicit characteristics of personal knowledge and scientific knowledge in its explicit component, constitutes the theoretical foundation for distinguishing knowledge in the core of the knowledge conversion process in innovative Japanese firms (Nonaka and Takeuchi, 1995). The work of economists since Machlup (1980), who partition information and knowledge and consider knowledge as a difficult-to-control, non-rivalrous, and cumulative good, induces the construction of a new theoretical framework: the knowledge economy (Foray, 2009). Knowledge is also understood as a fundamental process of situated learning, a "legitimate peripheral participation" process (Lave, Wenger, 1992), leading to developments in community studies (Wenger, 1998; Amin, Cohendet, 2004; Amin, Roberts, 2008). The works of Herbert Simon (1979) are extended and surpassed with the C/K theory, developing an axiomatic of design reasoning by proposing a partition between non-logical propositions (ideas) and logical propositions (knowledge) (Hatchuel, Le Masson, Weill, 2017).

The field of knowledge management has seen massive development in recent years. However, the heterogeneity of the theoretical approaches makes it challenging to construct a unified and stabilized conceptual framework (Easterby-Smith and Lyles, 2011; Ferrary and Pesqueux, 2006; Jashapara, 2010; Dibiaggio and Meschi, 2010; Schwartz and Te'eni, 2011). Theoretical and empirical investigation efforts (Margues and Simon, 2006) must continue to allow for a universally accepted comprehensive approach (Anand and Singh, 2011). Numerous investigations have been conducted to partition the field (Blacker, 1995; Shariq, 1997; Liebowitz, 1999; Alavi, Leidner, 2001; Swan, Scarbrough, 2001; Argote, McEvily, Reagans, 2003; Nonaka, Peltokorpi, 2006; Heisig, 2009; Serenko et al., 2009; Curado et al., 2011; Ragab et Arisha, 2013; Ribière et Walter, 2013; Serenko, 2013; Walter et Ribière, 2013; Serenko et Dumay, 2015; Syed, Murray, Hislop, Mouzughi, 2018). There are around a hundred proposals for structuring the field (Lièvre, Merour, 2019). For example, AGECSO has developed a matrix structuring of the field, combining research programs in rows and archetypal operations in columns (Paraponaris, Ermine, Guittard, Lièvre, 2012). Easterby-Smith and Lyles (2011), in a handbook from Wiley, propose to partition the field of knowledge management by distinguishing four quadrants: a) works from March (1991), then Argyris and Schon (1997) on organizational learning, which continues to develop today with Argote (2012), Cook and Brown (1990), or Lave and Wenger (1991), b) works around Senge (1991) in terms of the learning organization, c) works establishing a lineage between economists like Hayek, Penrose, Nelson, and Winter and management researchers like Nonaka and Von Krogh, d) finally, works centered on knowledge management practices such as Alavi and Leidner (2001); Hansen, Nohria, Tierney (1999).

The purpose of this Mi journal special issue is twofold. Firstly, to determine the extent to which the knowledge economy paradigm and/or the field of knowledge management constitute relevant theoretical frameworks for understanding these new "objects": practices,

tools, devices, philosophies. Secondly, to explore the impact of the emergence of these new "objects" on the evolutions of this new paradigm and related theoretical productions.

This special issue was initiated following the AGECSO conference held in Clermont-Ferrand in June 2019, organized by CleRMa (Clermont Research Management), Université Clermont Auvergne. The conference took place at IAE Clermont Auvergne, Groupe ESC Clermont, and within the Michelin R&D. It also received support from the ACTé laboratory, the Open Lab Exploration Innovation, PSDR 4 Inventer (INRA & AURA), and Clermont Auvergne Métropole. The call for papers was also disseminated beyond the AGECSO community. Out of 25 contributions received and evaluated, 7 were selected for this special issue.

Four papers have the knowledge economy context as a starting point, addressing various concerns classified as classic in the literature such as open innovation (Chesbrough, 2003), disruptive innovation (Harvey and Griffith, 2007), and a more recent concern about the emergence of a new form of the so-called Industry 4.0 (Kohler and Weisz, 2017).

The first article (Ben Arfi, Sahut, Hikkerova, Braune) focuses on open innovation. In a competition driven by innovation, knowledge flows can no longer be sufficiently generated internally, making open innovation approaches crucial for company strategies (Chesbrough, 2003). However, managing open innovation is highly complex. The article focuses on knowledge management in the case of virtual teams. Tacit knowledge conversion is studied through three cases of international platforms. Various conditions are identified at micro, meso, and macro levels. The results show that virtual teams succeed in sharing knowledge through digital platforms thanks to communication, integration into an innovative corporate culture at the micro level, a participative approach, transformative leadership, and transparency at the meso level, as well as participative governance, long-term commitment, and a shared common strategy at the macro level.

The second paper, by Neukam and Guittard, centers on multinational companies obligated to engage in disruptive innovation. The question of long-term survival for companies is highlighted with the notion of disruptive innovation, which implies a major change in the market and/or technology (Harvey and Griffith, 2007). This kind of innovation is made possible through bottom-up knowledge flows (Cohendet *et al.*, 2013; De Brentani and Reid, 2012). The article addresses the issue of knowledge management under distance conditions. The authors suggest that the ability to effectively exploit international knowledge during the innovation process depends on the relationship between international subsidiaries and the rest of the company. Two mechanisms are identified to manage these knowledge flows and reposition subsidiaries to promote disruptive innovations: managerial commitment to local innovation activities, and the integration of local employees into global processes.

Two other papers investigate knowledge management in the context of Industry 4.0, linked to the emergence of a project by a group of German industrialists in 2009, supported by the government of the Federal Republic of Germany, to build a so-called Industry 4.0. A cyber-physical production system enabling real-time interaction and coordination of manufacturing, logistics, engineering, and management activities. This perspective of hyper-industrialization is proposed, to use Veltz's expression (2017). The first article by Kuyken and Schropp focuses on intergenerational knowledge transmission. Four managerial proposals of Industry 4.0 are identified based on a literature review. For each

of them, transformations in intergenerational transmission practices are discussed. The second, by Yalenios, studies a case of collaboration between a researcher and HR practitioners to develop a talent management specific to production operators in an industrial automotive company. The concept of Nonaka's Ba is mobilized to build a third space of reflexivity between researchers and practitioners.

The question of long-distance knowledge management holds a prominent place in this special issue, as five articles address this theme. Among the four papers mentioned earlier, two focus on virtual teams, namely, the one by Ben Arfi, Sahut, Hikkerova, Braune and the one by Neukam and Guittard.

Three other articles fall into this category, where distance plays a role in the knowledge management process. The article by Hadoussa and Louati examines the effects of using social media on employees' social capital and knowledge sharing. Based on an online survey of 288 professionals using social media in a Saudi telecommunications company, it appears that using social media in the workplace positively influences knowledge sharing. The results contribute to clarifying the importance of different dimensions of social capital, especially shared vision and trust, and their role in improving profitable knowledge-sharing practices. The paper by Mebarki and Suguet, proposing to use the concept of a community of practice (Wenger, 1998) as a framework to understand how a call center deals with deviant customers in a service company, also falls into this theme of distance/proximity coupling. How to deal with difficult customers remotely when formal organization responses are ineffective? The purpose of this article is to show, through ethnographic investigation, that frontline actors spontaneously created a community of practice to address reprehensible customer behaviors. These four articles discuss the influence of the distance/proximity couple on knowledge management. Finally, the last paper in this special issue, by Charreire Petit and Talbot, directly studies the effects of proximities on learning to better understand how, theoretically, the dimensions of proximity are articulated with key stages of the learning process. Specifically, the different dimensions of proximity developed by Boschma (2005) (geographic, organizational, institutional, cognitive, social) are compared to a literature synthesis on the learning process, distinquishing five stages. The field of managing chronic pain in patients through consultations in pain management centers at the hospital is used for this comparison. The analysis reveals two main results. 1) Organizational proximity promotes patient empowerment and, consequently, their learning. 2) There is a mutual reinforcement effect between social proximity and learning, previously undocumented by the literature.

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