

Changing the Paradigm of Knowledge Co-Creation in Organizations using Generative Artificial Intelligence

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Abstract

In a digital ecosystem using Generative Artificial Intelligence (GenAI), there is a need to change the paradigm of organizational knowledge creation developed by Ikujiro Nonaka into a new paradigm of knowledge co-creation. That means a paradigm of integrating human knowledge with artificial knowledge generated by GenAI. Some researchers proposed a simple extension of the SECI (Socialization-Externalization-Combination-Internalization) model by introducing GenAI in stage of the model. However, tacit knowledge is incorporated in the human body and brain and cannot be extracted by GenAI. Therefore, socialization, externalization and internalization which contain tacit knowledge cannot be directly related to the action of GenAI. The only stage accessible from this perspective remains combination because it is a stage of processing explicit knowledge, and artificial knowledge is explicit. Based on this observation, we propose a different paradigm of knowledge co-creation. We consider a new knowledge cycle for artificial knowledge generation, having a similar structure with the human knowledge creation cycle and bridging both of them through the combination stage. The new paradigm allows a better understanding of artificial knowledge integration within the knowledge management cycles.

Keywords: human knowledge, artificial knowledge, knowledge creation, knowledge co-creation, Generative Artificial Intelligence.

JEL classification: M12, M19, O15, O33

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1. Introduction

A paradigm is a thinking model that has a certain capacity to explain some phenomena, based on its semantic structure and its cognitive complexity. When new phenomena appear, and the existing paradigm cannot explain them, it is necessary to search for a new pattern of thinking, a new paradigm (Kuhn, 1970). We face such a situation in knowledge management systems due to the emergence of GenAI and artificial knowledge. The concept of *artificial knowledge* expresses the outcomes of

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GenAI applications and belongs to the sciences of the artificial (Bratianu, 2025; Simon, 1966). However, such a change is conditioned not only of the researchers who develop a new paradigm, but also by the people who should use and need to expand their understanding horizon. Change is a complex and nonlinear process that implies a certain structure and coherence, starting from awareness of the need for a new paradigm. Kotter (1996) shows how a change process can be done in eight stages: establishing a sense of urgency, creating a guiding coalition or a critical mass, developing a vision and a strategy, communicating the change vision, empowering employees for broad-based action, generating short-term wins, consolidating gains and producing more change, and anchoring new approaches in the culture. Also, a new paradigm should be able to overcome some inertia barriers and find ways for its acceptance and diffusion (Bratianu, 2011; Kotter, 1996).

Nonaka (1994) developed the theory of knowledge creation dynamics in organizations, a theory developed further by Nonaka and Takeuchi (1995, 2019), Nonaka, Toyama and Hirata (2008). This theory and the SECI (Socialization-Externalization-Combination-Internalization) model became the fundamental paradigm for organizational knowledge creation dynamics and the core conceptual model for understanding knowledge management. *Socialization* is the stage of tacit knowledge exchange between people working together in a team. This process is specific to Japanese employees who are educated for cooperation and team work, where knowledge sharing is significant. It is important to remark that Nonaka (1994) considered for socialization only the exchange of tacit knowledge through observation and imitation. No intervention from explicit knowledge. *Externalization* is the stage that happens at the individual level, when tacit knowledge is transformed into explicit knowledge. This transformation is performed using natural or symbolic language, analogies, and metaphors (Nonaka & Takeuchi, 1995; Pinker, 2008). *Combination* is a stage where individuals' knowledge integrates into new concepts and ideas. *Combination* is based on sharing explicit knowledge. It is a social process leading to organizational knowledge creation. *Internalization* is the reverse process of externalization. Explicit knowledge is transformed into tacit knowledge at the individual level, contributing to a higher level of understanding. It is a result of a learning process. Therefore, socialization, externalization, and internalization implies tacit knowledge, while combination only explicit knowledge.

The emergence of *artificial knowledge* (Bratianu, 2025; Bratianu & Paiuc, 2025) represents a new phenomenon that cannot be explained by the SECI model and the theory of knowledge creation dynamics developed by Nonaka (1994) and Nonaka and Takeuchi (1995, 2019). Therefore, it is necessary to search for a new paradigm capable to explain the integration of human knowledge with artificial knowledge. Some authors proposed different models as possible answers to this need (Böhm & Durst, 2026; Harfouche et al., 2022). However, these models are misleading because there is a misinterpretation of tacit knowledge and its transformation into explicit knowledge.

The purpose of this paper is to propose a new model for knowledge co-creation capable to explain the integration of human knowledge with artificial

knowledge, overcoming the tacit knowledge barrier. The model is based on the idea that human knowledge (Bratianu & Bejinaru, 2019, 2023) and artificial knowledge (Bratianu, 2025; Bratianu & Paiuc, 2025) should be generated in separate cycles and then integrated through the stage of combination.

2. Literature review

It is important from the very beginning to stress the fact that tacit knowledge is a result of experiential learning (Kolb, 2015), and it is part of our body and brain (Tsoukas, 2011; Hadjimichael & Tsoukas, 2019; Polanyi, 1983). Tacit knowledge is the root of explicit knowledge and the main force in determining human behavior. “Subjective insights, intuitions, and hunches fall into this category of knowledge. Furthermore, tacit knowledge is deeply rooted in an individual’s action and experience, as well as in the ideal, values, or emotions he or she embraces” (Nonaka & Takeuchi, 1995, p. 8).

Böhm and Durst (2026) developed the GRAI-Generative Receptive Artificial Intelligence model as an augmentation of the SECI model (Nonaka & Takeuchi, 1995, 2019). They considered each stage of the SECI model to be composed of both human and artificial knowledge (Figure 1).

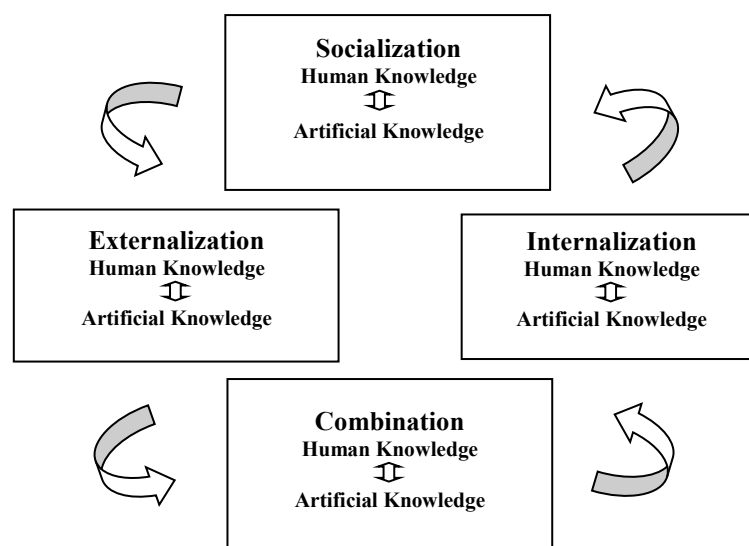


Figure 1. The GRAI model
Source: Adapted from Böhm & Durst, 2026

Although the model looks interesting, it ignores the incorporated nature of tacit knowledge and the practical impossibility for artificial knowledge to interact directly with it. For instance, how could the knowledge of swimming interact with GenAI? How can a computer extract the tacit knowledge of dancing and then

integrate it with artificial knowledge? It is an illusion. Therefore, the GRAI model contains some fundamental errors in interpreting tacit knowledge and its availability to be processed by computers. The authors assert that “The socialization mode could be enhanced by GenAI in several ways. For example, virtual environments or platforms could be created where people in different (geographical) locations can interact in real time, fostering socialization regardless of physical distance” (Böhm & Durst, 2026, p. 4). That is a misunderstanding of socialization because any digital platform uses natural and symbolic languages to convey knowledge; that is explicit knowledge and not directly tacit knowledge. The same error is made in considering the externalization stage. “GenAI can help identify conceptual patterns and relationships, supporting organizations to formalize and externalize tacit knowledge in a more systematic and standardized manner” (Böhm & Durst, 2026, p. 5). Here, the error comes from considering the externalization an organizational process, while Nonaka and Takeuchi (1995, 2019) considered it an individual process. The same discussion remains valid for the stage of internalization. The conclusion is that the GRAI model is erroneous and non-functional.

Harfouche et al. (2022) developed the KAM – Knowledge Augmentation Matrix Model. The authors assert that “The Knowledge Augmentation Matrix (KAM) complements and updates the edge, explicit human knowledge, and human-in-the-loop Informed AI” (Harfouche et al., 2022, p. 13). The authors start with the SECI 2x2 matrix generated by tacit and explicit knowledge and expand it to a 3x3 matrix generated by tacit, explicit, and artificial knowledge. The SECI matrix constitutes the core of the expanded matrix, containing the known processes of socialization, externalization, combination, and internalization. The new processes generated by the intervention of artificial knowledge are the following: *alimentation*, *aggregation*, *amplification*, *reflection*, and *fusion*. *Alimentation* is the transformation of tacit knowledge into artificial knowledge via GenAI. However, we have already demonstrated using arguments from literature (Hadjimichael & Tsoukas, 2019; Nonaka & Takeuchi, 1995, 2019; Polanyi, 1983; Tsoukas, 2011) that tacit knowledge being incorporated into our body cannot interact directly with artificial knowledge. It is first transformed into explicit knowledge, and only then may we consider an interaction with artificial knowledge. The same discussion is valid for the process of *reflection* that represents the direct transformation of artificial knowledge into tacit knowledge. “Human enriches the artifact, and the artifact infuses human with new knowledge. Through many iterative loops, the process moves from an individual to a collective level, as human-in-the-loop IAI inherently carries a philosophy of sharing and dissemination. The recursive nature of the KAM should be emphasized here, as there is no definite end to the process” (Harfouche et al., 2022, p. 13). However, this description is not accurate because of the tacit knowledge barrier already discussed above. Figure 2 presents the expanded KAM matrix, where the new transformation processes are marked in red.

From >>> To	Tacit knowledge	Explicit knowledge	Artificial knowledge
Tacit knowledge	Socialization	Externalization	Alimentation
Explicit knowledge	Internalization	Combination	Aggregation
Artificial knowledge	Reflection	Amplification	Fusion

Figure 2. The KAM structure
Source: Adaptation after Harfouche et al., 2022

Zhang et al. (2025) consider five types of tacit knowledge: relational, somatic, verbal, metacognitive, and collective. Using this classification, the authors develop a model for SECI augmentation more complex than the previous ones, but the main problem remains unsolved: tacit knowledge cannot be extracted directly by GenAI and processed further.

3. Methodology

The paper is based on a systematic literature review, on the theory of knowledge creation dynamics (Nonaka, 1994; Nonaka & Takeuchi, 1995, 2019), the theory of knowledge fields and knowledge dynamics (Bratianu & Bejinaru, 2019, 2020), metaphorical thinking (Lakoff & Johnson, 1999), artificial knowledge generation (Bratianu, 2025), and design science (Gregor, 2009; Hevner et al., 2004). The theory of knowledge creation dynamics has already been explained. The theory of knowledge fields and knowledge dynamics demonstrates that knowledge is a nonuniform and nonlinear field composed of rational knowledge, emotional knowledge, and spiritual knowledge. Rational knowledge is a result of rational thinking and is represented by explicit knowledge. It is processed mostly by our consciousness. Emotional knowledge is nonverbal and is represented by tacit knowledge. It is the knowledge that is generated by human emotions and feelings. It is processed mostly unconsciously. Spiritual knowledge encapsulates ethical and moral values and the principles of applying them.

The purpose of design science is to create artefacts as solutions for complex problems in the world of artificial (Simon, 1996). Those artefacts can be new concepts, models, or theories for some conceptual frameworks. We need these artefacts because the principles and laws for natural phenomena do not apply in the world of artificial. “Design science addresses research through the building and evaluation of artefacts designed to meet the identified business need. The goal of behavioral science research is truth. The goal of design science is utility” (Hevner et al., 2004, pp. 79-80).

4. Results and discussions

Based on the systematic literature review, we found that all the models proposed as simple extensions of the SECI model, implying a direct transformation of tacit knowledge into artificial knowledge, break the fundamental formulations of Nonaka and Takeuchi (1995, 2019). The theory of knowledge fields (Bratianu & Bejinaru, 2019, 2020) shows that there are three interconnected fields: rational knowledge, emotional knowledge, and spiritual knowledge. Artificial knowledge is exclusively rational and explicit. Therefore, there are two different forms of knowledge, which suggests designing two different cycles for knowledge creation or generation: the human knowledge cycle and the artificial knowledge cycle. The human knowledge cycle is the SECI model described above. Keeping the same structure, we propose the CASH cycle (Combination-Artificialization-Synthetization-Humanization) that can be interconnected with the SECI cycle through the stage of Combination. Figure 3 shows the structure of the CASH cycle.

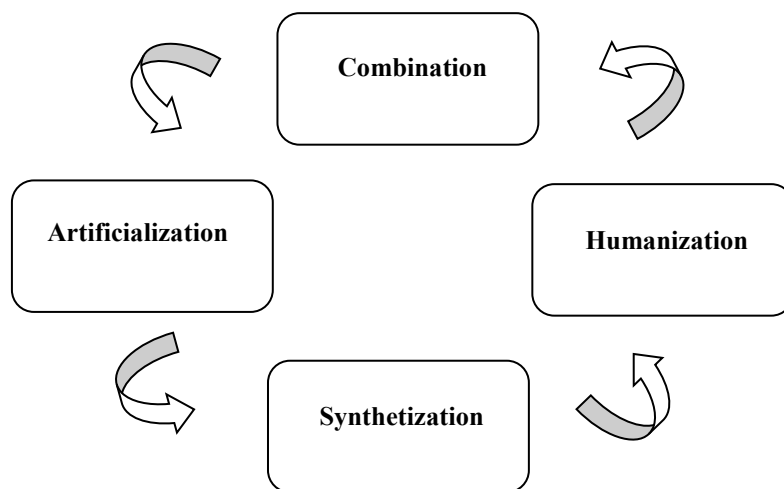


Figure 3. The CASH knowledge cycle

Source: Authors' research

Now, we can integrate human knowledge with artificial knowledge considering both SECI and CASH cycles operating together through the stage of combination, the only stage in the human knowledge cycle having exclusively explicit or rational knowledge. Figure 4 shows this composed SECI-CASH cycle.

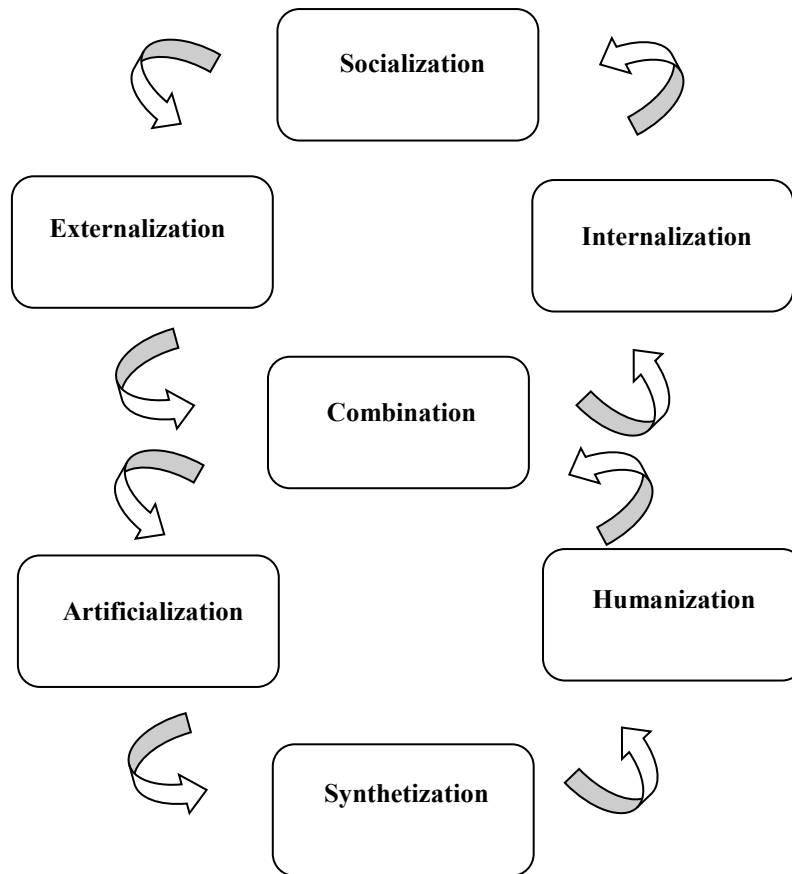


Figure 4. The integrated SECI-CASH knowledge cycle

Source: Author's research

The augmentation of the SECI knowledge cycle with the CASH knowledge cycle overcomes the tacit knowledge barrier and allows a continuous flow of knowledge through both cycles. In this new context, we should consider knowledge co-creation instead of knowledge creation. Also, we should remark that the new structure of the integrated model does not lead to any knowledge spiral dynamics like in the case of SECI model (Nonaka & Takeuchi, 1995, 2019). It leads to a strange attractor from complexity theory. “The path of the attractor is one long, continuous track that theoretically never intersects itself and in time would visit every part of its domain, filling all the available space” (Bird, 2003, p. 7).

5. Conclusions

The purpose of this paper is to show that the emergence of artificial knowledge imposes a new paradigm for organizational knowledge creation, because the theory developed by Nonaka and Takeuchi (1995, 2019) is only for

human knowledge. Some researchers have proposed new models for the augmentation of the well-known SECI model, but they ignored the fact that tacit knowledge is incorporated in the human body, and it cannot be extracted and amplified using GenAI. Socialization, externalization, and internalization stages contain tacit knowledge and cannot be extended directly by GenAI. It remains the only combination that contains exclusively explicit knowledge.

Therefore, the changing paradigm for knowledge creation should avoid the trap of tacit knowledge, especially because it contains emotional knowledge and artificial knowledge is rational and explicit. We change the perspective of SECI augmentation and start with the observation that human knowledge and artificial knowledge are totally different. Then, based on design science research, we conceive a new knowledge creation cycle focusing on artificial knowledge. Keeping the same structure for the cycle as that conceived by Nonaka and Takeuchi (1995, 2019), we propose an artificial knowledge cycle composed of combination, artificialization, synthetization, and humanization – the CASH knowledge cycle.

Finally, we integrate both cycles and get a composed SECI-CASH cycle for knowledge co-creation that reflects real processes and overcomes the tacit knowledge barrier. The new cycle does not generate a knowledge spiral but a strange attractor from the complexity theory. That reflects not only the exchange of explicit knowledge between people within the combination stage, but also the iterative and interactive dialogue between people and computers. The combination stage becomes the process of human knowledge and artificial knowledge integration. Now, instead of knowledge creation dynamics we face a knowledge co-creation dynamics, which is much more complex.

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