Collective consciousness in business ecosystems

Marja Turunen [1, 2] and Matti Mäntymäki [1]

[1] Turku School of Economics, University of Turku, Finland
[2] School of Science, Aalto University, Espoo, Finland
marja.turunen@utu.fi, matti.mantymaki@utu.fi

Abstract. This paper presents collective consciousness as a lens through which to analyze the psycho-social dynamics of business ecosystems. While the business ecosystem concept has drawn a lot of attention in software and business literature, the intangible psycho-social layers of attention and shared cognition produced by the interactions between ecosystem actors are not well understood. To address this void in the literature, we adopt collective consciousness as a conceptual tool to better understand business ecosystems as complex networks of heterogeneous actors. We present an illustrative case of an emerging business ecosystem of digital services for real estate and facility management and scrutinize the applicability of collective consciousness as a conceptual device to better understand the characteristics and dynamics of business ecosystems. We suggest that employing collective consciousness provides a useful analytical device to better understand the complexities emerging from the interactions between the actors. We further discuss under what circumstances employing collective consciousness as a conceptual tool adds particular value for business ecosystem research and practice.

Keywords: business ecosystem, collective consciousness, digitalization, conceptual analysis, digital transformation, digital disruption

1 Introduction

This paper presents collective consciousness as a lens through which to analyze the psycho-social dynamics of business ecosystems. The term *ecosystem* has been widely adopted in the business and technology literature as a metaphor to describe certain types of business networks (e.g., Autio & Thomas, 2014; Hyrynsalmi, 2015; Mäntymäki & Salmela, 2017; Hyrynsalmi, Mäntymäki, & Baur, 2017; Teece, 2010; Mäntymäki, Salmela, & Turunen, 2018).

The current business and technology literature includes a number of variants of the ecosystem concept, such as business ecosystems (Peltoniemi & Vuori, 2004), innovation ecosystems (Oh, Phillips, Park, & Lee, 2016), software ecosystems (Hyrynsalmi, Suominen & Mäntymäki, 2016), service ecosystems (Vargo & Lusch, 2010), product ecosystems (Frels, Shervani, & Srivastava, 2003), and platform ecosystems (Ceccagnoli, Forman, Huang, & Wu, 2013), to name but a few. At the same time, however, the use of the ecosystem metaphor has also been criticized, and the accuracy of the

metaphor has been questioned (Oh, Phillips, Park, & Lee, 2016; Hyrynsalmi, 2015; Hyrynsalmi & Mäntymäki, 2018).

The term ecosystem emanates from ecology, where it typically denotes a unit of biological organization made up of all the organisms in a given area, thus forming a "community." Organisms within a community interact with the physical environment so that the flow of energy leads to a characteristic trophic structure and material cycles within the system (Odum, 1966).

The concept of collective consciousness in turn emanates from the social sciences, particularly social psychology and sociology (Vygotsky, 1980; Hutchins, 1995), and originally dates back to Durkheim (1895). In his studies of the sociology of suicide, Durkheim (1951) found out that individuals' acts, such as suicide, depended on the collective consciousness within a society. Thereafter, collective consciousness has been examined in a wide range of contexts, including business networks (Allee, 2003; Normann & Ramirez, 1993; Normann, 2001) and business ethics (Pandey & Gupta, 2008).

Interestingly, however, the intangible psycho-social dimensions and the associated complexity of business ecosystems have thus far received less scholarly attention. To address this void in the current body of knowledge, we employ the concept of collective consciousness to scrutinize the intangible elements of business ecosystems. In doing so, we follow Tsoukas (2017), who maintained that increasing the complexity of organizational theory is essential to better capture the complex nature of real-life organizational phenomena. To this end, we adopt Turunen's (2015) view of organizing, which maintains that the ecosystem conceptualization is embedded in organizational consciousness.

The purpose of this paper is to understand if and how collective consciousness manifests itself in business ecosystems. We present an illustrative case study of an emerging business ecosystem for internet of things (IoT)–driven real-estate and facility services. This study contributes to the business ecosystem literature by delineating a need for increased analytical depth and conceptual clarity in studying the intangible elements and dynamics of business ecosystems. We further conclude that additional scrutiny of the ecosystem metaphor and the value it adds to theorizing and managerial communication is needed.

The paper proceeds as follows: After the introductory section, we present a discussion of the business ecosystem concept. Thereafter, we present a set of related constructs used to depict business networks and analyze how they converge with, and diverge from, the business ecosystem construct. The paper concludes with a synthesis of the analysis, a reflection upon an emerging digital business ecosystem in real-estate and facility management, and lastly presents suggestions for the future research.

2 A consciousness-based view of business ecosystems

2.1 Collective consciousness

In sociology, the term *collective consciousness* dates back to Durkheim (1895). Durkheim depicted collective consciousness as an awareness of something bigger than the individual, such as the shared understanding of social norms, and those norms are able

to affect individuals. In sociology and social psychology, collective consciousness (Vygostky, 1978; Leontjev, 1973; Bronfenbrenner, 1977) has been viewed to manifest itself in people's activities in the world, particularly in symbolic systems such as language. This perspective is exemplified by Leontjev (1973, p. 183), who viewed consciousness as pervading all human actions, with activity being an important substance of consciousness. As a result, collective consciousness is distinct from individual-level consciousness (Turunen, 2014, 2015).

According to Vygotsky (1980), collective consciousness is a purpose- and meaning-making dimension above any individual actor (individuals, organizations, or society). While actors employ their individual consciousness, collective consciousness emerges and is constituted through interactions and meaning-making between actors (Turunen, 2015). The interactions between actors generate relational consciousness in the collective field. In addition, actors interact with other relational fields beyond their ecosystem. Second, actors engage in the meaning-making of their own entity, such as their business, group or organization. In the previously described interactions, relational meaning-making is built. Furthermore, part of the meaning-making is involved with other actors beyond the ecosystems of an actor.

The borders of collective consciousness are an inevitable dynamic. An individual actor—that is, an individual, a group, or an organization—can access the collective consciousness. However, an individual actor cannot reach the whole picture and totality of collective consciousness (Vygotsky, 1980; Hutchins, 1993). At the same time, an individual is influenced by the collective consciousness, often through subconscious processes, habits, and routines.

Since collective consciousness is essentially socially constructed, it is affected by, and has an impact on, a number of individual-, group-, and society-level contingences, such as trust, norms, and values, to name but a few. Because collective consciousness is based upon reciprocal ties between actors, it may play a focal role in inducing transformation and renewal but also repression and stagnation. In any case, the process of developing the consciousness and the artifacts produced by the process (Garud & Turunen, 2014, 2017) need simultaneous attention. In the next subsection, we discuss the business ecosystem concept from a collective-consciousness perspective.

2.2 Business ecosystem

The business ecosystem concept was developed by Moore (1993). His seminal article describes capability coevolution with innovation with distinct stages towards a shared future and an accruable profit model of the business ecosystem. Recently, Mäntymäki, Salmela, and Turunen (2018) found that business ecosystems appear to have three characteristic features: First, members of an ecosystem are highly interconnected. Interconnectedness refers to the fact that the success or failure of a member of an ecosystem affects the other members. Second, a business ecosystem often includes a keystone that "regulates ecosystem health" (Moore, 1993, p. 8). The keystone is typically an actor that is able to support and orchestrate the activities that take place within the ecosystem. Third, ecosystems are complex systems (Peltoniemi & Vuori, 2004). As described by Cowan (1994, p. 1), complex systems "contain many relatively independent parts which are highly interconnected and interactive." Lewin (1999) in turn further contends that

complex systems are systems whose properties are not fully explained by an understanding of its constituent parts. Thus, complex systems can be informed by the research stream of process studies (James, 1977; Tsoukas & Chia, 2002) of collective interaction (Kimble, 2008).

While explicit notions of collective consciousness are missing in the ecosystem concept in explicit terms, collective consciousness is accommodated in ecosystem terms most clearly in the value network. In fact, collective consciousness is fostered by the interrelations between individuals, groups, and organizations. The contributors to the concept of value networks mentioned the benefits of collective consciousness explicitly, such as Normann (2001) and Allee (2003). For instance, Allee (2003, p. 54) maintained that "collective consciousness provides a new transformative shift towards understanding the more complex layers of the system and new avenues for connecting together with other players"—that is, collaboration in the intangible areas of value creation.

Mäntymäki et al. (2018) explained that the business ecosystem concept contains an internal tension. The current consensus presupposes that a business ecosystem is a collective entity that is regulated and/or orchestrated by a single dominant actor. However, a deeper examination of the social dimensions of business ecosystems implies that ecosystem actors may over time develop a common awareness of the ecosystem entity that helps them to manage and make sense of the diversity and complexity of the network. Against this backdrop, we discuss how collective consciousness manifests itself in the key criteria Mäntymäki and Salmela (2017) used to evaluate different types of business networks, including the definition of group borders, the nature of relationships between actors, sources of transformation and change, and applicability. Table 1 presents the dimensions of consciousness and their descriptions for an emerging ecosystem.

Table 1. Dimensions of the collective consciousness for an emerging ecosystem

Dimension	**Description**
Definition of group borders	Collective consciousness is constructed in a web of actions and relationships that generates both tangible and intangible value through complex dynamic exchanges between two or more individuals, groups, or organizations.
Primary relationship between actors	Collective consciousness is an intangible, connected field available for each actor that enables a connection to the larger system.
Sources of transformation and change	Collective consciousness provides a new transformative shift towards understanding the more complex layers of the system and new avenues for connecting and exchanging information together with other players.
Applicability	Collective consciousness can explain the reasons how ecosystems may flourish and be able to generate big leaps, enable strategic collaboration, and information exchange between diverse organizations and individuals with partly shared and competitive/diverse motives.

3 The case of an emerging business ecosystem for digital real-estate and facility services

Advances in digital technologies, for example, in sensor technology and IoT (cf. Mian, Mäntymäki, Riekki, & Oinas-Kukkonen, 2016), fuel the generation of data (Koskenvoima & Mäntymäki, 2015) and thus enable the creation of new value networks and business models (cf. Wirén & Mäntymäki, 2018; Xu, Turunen, Ahokangas, Mäntymäki, & Heikkilä, 2018) for established, mature businesses.

This in turn often challenges the existing logic of value creation. For example, in the digital real-estate and facility business ecosystem, the collective consciousness of a value network can be viewed as being interwoven into the value-creation process. As a consequence, the value constellation created by the ecosystem crystallizes and may start to appeal to new actors, who join in the value creation and affect the contextual dimensions of the ecosystem (Xu et al., 2018).

We illustrate this process with a case of an emerging business ecosystem for IoT-driven real-estate and facility services. The research and development activities toward the creation of a new business ecosystem are supported by Business Finland, a key source of public research and development funding in Finland. The purpose of the ecosystem initiative was to ignite a set of activities to develop new end-user services for the real-estate and facilities business by leveraging IoT, sensor technology, and artificial intelligence. The tangible activities within the initiative have been divided into four thematic entities, titled well-being, intelligent restaurant, data-as-services, and empathetic building.

We start our analysis by identifying the different actor types involved in the ecosystem (cf. Islam, Mäntymäki & Turunen, 2019) and scrutinizing their potential influence on the collective consciousness in the network. Table 2 provides a summary of the analysis.

Table 2. The identified actor types influencing the qualities of collective consciousness in the emerging business ecosystem

Actor type	Critical dimensions	Description	Collective consciousness illustrative outcomes
Individual participant or ecosystem representative.	Individual consciousness, reference to cultural base, knowledge, value, meaning-making, interrelations, and digital and social media presence.	Individual actors, such as an individual or organization, with a single participant in the project/ecosystem.	Dependent on the intensity of the interactions and qualities of the individual with others.
Organization accommodating participants and organizations and institutions fostering ecosystem development.	Organizational consciousness and culture, such as strategic intentions, value system, distribution of information and power, communication channels, artificial intelligence, and the digitalization phase.	The dynamics of a value networks are visible to a certain degree. Participants collaborate in and negotiate the value constellation. Interactions in the value network create collective consciousness.	A mixture of the individual and collective consciousness.
Project organization.	Intervened by the consciousness of the dominant players in the ecosystem and the aggregated project consciousness.	The project consciousness is not a direct aggregation of the project participants' qualities of consciousness. The dominant roles in the project, such as project leader, affect every participant by their consciousnesses.	A loose aggregate of individual and collective consciousness. The project organization has power over the collective consciousness development.
Emerging ecosystem, a complex system.	Depending on the fit of the competencies and interactions with the other participants and their own reference group, a whole system transformation is possible during the ecosystem evolution.	Provides an alternative explanation of the value of the interaction and information exchange between the ecosystem players. Points out the importance of the qualities of the interaction, such as trust and shared values, in a digital platform.	A new collective cultural layer supporting the ecosystem or, in the worst case, a collective consciousness holding back and preventing the full potential of the ecosystem outcomes.

In our analysis, we viewed the actor type, such as an individual, organization, project, or emerging ecosystem, as pertaining to a particular constellation of collective consciousness, including ties to the collective consciousness of other actors and the intensity of the interaction. The illustration of the possible outcomes of collective consciousness in turn indicates, for instance, opportunities to influence the critical dimensions of the collective consciousness. Consequently, each actor of the ecosystem influences the quality of the collective consciousness. Furthermore, collective consciousness is contingent upon the intensity, frequency, and quality of the interactions between the actors. As a result, in its current state, the emerging ecosystem appears to resemble what the literature refers to as a value network (Allee, 2003). This is due to the fact that the value network concept does not assume the existence or emergence of a dominant player. However, in our case, it is possible that some of the actors make a deliberate effort to take a dominator role in the ecosystem and, thus, in the production of collective consciousness.

The lack of a clear dominator may, on the one hand, increase the need for additional negotiation and thus slow down the development activities. On the other hand, it also may force the actors to articulate their needs and intentions and take a greater responsibility in the overall course of action.

4 Discussion

This study set out to understand if and how collective consciousness manifests itself in business ecosystems. To this end, we presented an illustrative case study of an emerging business ecosystem for IoT-driven real-estate and facility services. We highlight three main findings from the study.

First, collective consciousness appears to provide a conceptual tool to describe and examine how the actors of a business ecosystem deal with the complexities and uncertainties inherent to a networked mode of operation. Hence, our study adds to those by Allee (2003) and Normann (2001), who employed collective consciousness to study value networks, and Hutchins (1995), who highlighted collective cognition.

Second, we conclude that the concept of business ecosystem appears to enable the analysis of both collaborative and competitive relationships. In this regard, the business ecosystem diverges from other concepts used to describe business networks (cf. Mäntymäki & Salmela, 2017; Mäntymäki et al., 2018). These collaborative and competitive interactions in turn may result in unique properties in terms of how they generate collective consciousness.

Third, we point out collective consciousness may be beneficial in dealing with the complexity pertinent to dynamic multi-actor networks such as business ecosystems. Using theoretical and conceptual tools that can explain the research problem with minimal complexity is generally considered a virtue in research. At the same time, however, overly simplistic theoretical and conceptual tools may not be sufficient to identify solutions for highly complex problems (Boulding, 1956). For example, inter-organizational collaboration generates different levels and qualities of attention (Ocasio, 1997; Teece, 2007), such as collective awareness and, consequently, collective consciousness. This in turn can help in dealing with complex issues and problems, including innovations, sustainability, and ethics (Turunen, 2015, 2018; Garud, Turunen & Karunakaran, 2018 a,b).

We conclude that collective consciousness may produce certain intellectual assets for describing and explaining a transformative change that takes place within a complex system. We further argue that this transformative change is a key attribute and characteristic of a business ecosystem.

Like any other piece of research, this study suffers from a number of limitations. First, the study was of a conceptual nature. Future research could seek to empirically examine how collective consciousness may manifest itself in the context of business ecosystems. For example, investigating the nature of relationships between collective consciousness and trust in business ecosystems would potentially significantly add to the current knowledge of ecosystem dynamics (cf. Basole, Russell, Huhtamäki,, Rubens, Still, & Park, 2015; Mäntymäki, 2008).

Second, in addition to the business ecosystem, the literature contains a number of other concepts used to describe business networks (Mäntymäki & Salmela, 2017). Future research should thus incorporate, for instance, platforms and alliances in the analysis. However, there are presumably different types of business ecosystems. Future studies could thus identify different types of business ecosystems and examine if and how they differ in terms of collective consciousness.

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