



Emergence in marketing: an institutional and ecosystem framework

Stephen L. Vargo¹ · Linda Peters² · Hans Kjellberg³ · Kaisa Koskela-Huotari³ · Suvi Nenonen³ · Francesco Polese⁴ · Debora Sarno⁵ · Claudia Vaughan¹

Published online: 7 April 2022

© The Author(s) 2022

Abstract

Many core marketing concepts (e.g., markets, relationships, customer experience, brand meaning, value) concern phenomena that are difficult to understand using linear and dyadic approaches, because they are emergent. That is, they arise, often unpredictably, from interactions within complex and dynamic contexts. This paper contributes to the marketing discipline through an explication of the concept of emergence as it applies to marketing theory. We accomplish this by first drawing on the existing literature on emergence in philosophy, sociology, and the theory of complex adaptive systems, and then link and extend this understanding to marketing using the theoretical framework of *service-dominant (S-D) logic*, particularly as enhanced by its service-ecosystems and institutionalization perspectives. Our work recognizes both emergence and institutionalization as integral or interrelated processes in the creation, maintenance, and disruption of markets and marketing phenomena. We conclude by discussing implications for marketing research and practice.

Keywords Emergence · Service-dominant logic · Institutionalization · Complex adaptive systems · Service ecosystems

Introduction

There is a fundamental shift taking place in academic marketing, away from understanding markets and other marketing-related phenomena in terms of strictly deterministic properties and generally predictable relationships, as has often been implied by the traditional marketing literature. At least in part, this has been necessitated by the

increasingly distributed nature of markets and value creation in today's progressively more globalized economy. The shift is toward understanding markets as complex adaptive systems (e.g., Polese et al., 2017; Vargo Lusch, 2017) and thus marketing phenomena as relational and dynamic (Hunt & Madhavaram, 2020; Zhang & Chang, 2021). Direct calls for this systemic understanding can be found in Barile et al. (2016), Giesler and Fischer (2017),

John Hulland served as editor for this article.

✉ Stephen L. Vargo
svargo@hawaii.edu

✉ Linda Peters
linda.peters@nottingham.ac.uk

Hans Kjellberg
hans.kjellberg@hhs.se

Kaisa Koskela-Huotari
kaisa.koskela.huotari@hhs.se

Suvi Nenonen
suvi.nenonen@hhs.se

Francesco Polese
fpolese@unisa.it

Debora Sarno
debora.sarno@uniparthenope.it

Claudia Vaughan
cmv815@hawaii.edu

- ¹ Shidler College of Business, University of Hawai'i at Manoa, 2404 Maile Way, Honolulu, HI 96822, USA
- ² Nottingham University Business School, University of Nottingham, Jubilee campus, Wollaton Rd, Nottingham NG8 1BB, UK
- ³ Department of Marketing & Strategy, Stockholm School of Economics, P.O. Box 6501, SE-11383 Stockholm, Sweden
- ⁴ Department of Management & Innovation Systems, University of Salerno, 132 Via Giovanni Paolo II, Fisciano (SA) 84084, Italy
- ⁵ Department of Management and Quantitative Sciences, Parthenope University of Naples, 13 Via Parisi, Napoli 80132, Italy

Rand and Rust (2011), Vargo and Lusch (2011, 2016, 2017), and Wilkinson and Young (2013) to name a few.

It is also implied in dynamic conceptualizations of markets, market development and marketing actions, as addressed in research streams, such as *market shaping* (e.g., Nenonen et al., 2019), *effectuation theory* (e.g., Sarasvathy, 2009), and *consumer culture theory* (e.g., Arnould & Thompson, 2005), among others. Arguably, this shift has been accelerated in recent years by the increasing general acceptance in academic marketing of *value*, as well as related marketing outcomes, as being *dynamically cocreated* (Bolton, 2020), rather than firm created and delivered.

One of the most fundamental insights accompanying this systemic orientation is an understanding of an essential characteristic of all complex systems: *emergence* (Goldstein, 2011; Ladyman & Wiesner, 2020), broadly, *new, novel, and/or unanticipated outcomes resulting from dynamic relationships* of system's elements (Clayton, 2006). It can be seen in the improved living standards afforded by the increasingly distributed nature of value cocreation, as well as associated, but unanticipated consequences, such as globalized “supply chain” problems. Likewise, it can be seen in both problems brought on by the unanticipated influence of marketing-related activities on ecological sustainability, such as the impact of paper bag use on deforestation; as well as the often-unintended consequences of solutions that are anticipated to be more sustainable, such as the clogging of oceans by the plastic bags intended to assist in forest preservation.

Allusions to emergence have been ubiquitous in the marketing literature for some time. Examples include the development of new markets (e.g., Dewald & Truffer, 2011; Ehret, 2013; Hietanen & Rokka, 2015; Martin & Schouten, 2014), new industries (e.g., Jacobides, 2005; Lusch et al., 2016; Malerba & Orsenigo, 1996), market innovation (e.g., Kjellberg et al., 2015; Sprong et al., 2021), dominant designs (e.g., Srinivasan et al., 2006), new market categories (e.g., Durand & Khaire, 2017) as well as the transformation of service systems (e.g., Skålén et al., 2015). However, the use of the term has, most often, been casual, intended to denote a phenomenon that has recently developed or evolved, such as the “emergence of corporate environmentalism” (Menon & Menon, 1997) or the “emergence of service marketing thought” (Brown et al., 1994).

Here, we adopt a more precise conceptualization of emergence, grounded in systems thinking, as *a phenomenon that arises from the relationships among existing system's elements but that is qualitatively different from and irreducible to them* (Capra & Luisi, 2014; Deacon, 2006). Understanding emergence is critical to marketing because, as we will argue, markets are themselves emergent phenomena, as are most, if not all, central marketing-related outcomes—e.g., value, experience, satisfaction, brand meaning.

There are a few examples of more rigorous investigations of emergence within marketing, most notably Peters (2016)

who defined resource integration in terms of emergence, Taillard et al. (2016) who used the concept of emergence to illustrate how service ecosystems are formed, and Rand and Rust (2011) who proposed the use of agent-based modeling as a more appropriate methodological tool for the illumination of emergence marketing research (see also Fujita et al., 2018). However, to date, research in academic marketing is lacking a more detailed explication and integration of the concept and process of emergence as they relate to marketing phenomena. Partially, this might be because, until relatively recently, marketing has not had a sufficiently accepted, indigenous, market and system-oriented framework comprising the essential elements for explicating and elaborating emergent phenomena. With the recent evolution of the service-dominant (S-D) logic's institutional and ecosystems perspective (e.g., Vargo & Lusch, 2016), we believe that there now is one.

Thus, our intention is to use the S-D logic framework, informed by literature on emergence from philosophy, sociology, and the theory of complex adaptive systems, to contribute to the marketing discipline through an explication of the concept of emergence as it applies to marketing by providing an initial, broad, conceptual framework, as well as a more detailed and dynamic model of emergence as a market-related process. In addition to its origination in the marketing literature, and its systemic and processual orientation, S-D logic's (1) value-cocreation-through-resource-integration and service-for-service exchange in service ecosystems perspective and (2) incorporation of institutional processes, coupled with its (3) multi-level perspective and (4) foundational use of complex adaptive systems theory, provide the necessary theoretical framework and conceptual narrative for a market- and marketing-centered conceptualization of emergence. It has also been used foundationally in several studies of emergence in marketing (e.g., Peters, 2016; Peters et al., 2020; Polese et al., 2021; Taillard et al., 2016) and its conceptual and processual framework is reconcilable with the conceptualization of emergence in other literatures. Additionally, S-D logic's metatheoretical level of abstraction is applicable to all levels of aggregation (e.g., firm-customer, communities, industries, societies: Vargo & Lusch, 2017) and generalizable to various marketing contexts. Its ability to accommodate diverse marketing phenomena is evidenced by its application across essentially all sub-disciplines of marketing, as well as many disciplines outside of marketing (Vargo & Lusch, 2017).

This paper proceeds as follows. First, we define and clarify the concept of emergence by drawing on a multi-disciplinary literature review. We then examine why the concept of emergence is relevant, if not essential to theorizing about marketing phenomena and use the S-D logic framework as the scaffolding to explicate emergence in markets. Using this framework, we then develop a dynamic model of emergence applicable to marketing phenomena. Finally, we discuss the implications of our work for research and practice in marketing.

Table 1 Conceptual reconciliation of theoretical frameworks and terms

S-D Logic Literature	Emergence Literature	Complex Adaptive Systems Literature	Institutional Literature	Updated S-D Logic Model/Framework
Perceived Value (outcome)		System viability / survivability		Service ecosystem viability
Value (co)creation (process)	Adaptation	Adaptive behavior/ Autopoiesis	Goal-directed behavior	Adaptation/Value (co)creation
Actors (resource-integrating & service exchanging)	Basal elements	Constituent Elements	Humans	Actors
Service exchange	Interaction	Interaction	Interaction	Service exchange/Interaction
Institutions	Tangible and intangible structures	Memory or internal structure	Regulative, normative, and cultural-cognitive elements	Institutional structure/memory
Institutional arrangements	Structure	Structure	Assemblages of related institutions	Institutional arrangements
Institutionalization	Conditioning	Lock-in	Habituation, Institutionalization	Institutionalization/lock-in
Feedback	Amplification	Positive and negative feedback	Feedback dynamics	Feedback/amplification
Service ecosystem	System	Complex adaptive system	Social system	Service ecosystem
Emergence	Emergence	Emergence	Proto-institutions	Emergence/Orders of emergence

The concept of emergence

Emergence has been studied in a broad range of academic domains and related disciplines. Although there is a lexicon common to all of these, each also has its own, nuanced lexicon. A brief overview and reconciliation of these domains and lexicons and the lexicon of our proposed framework (last column) is provided in Table 1, with key terms defined in the Appendix. The purpose of the table is two-fold: (1) to align the concepts of the various systemic- (including S-D logic) and emergence-related literatures, and (2) to further inform the S-D logic framework, used foundationally here to link the concept of emergence with marketing.

Emergence has also been studied in varied contexts, to explore wide-ranging research questions. For example, biologists have sought to explain how life emerges from inanimate matter (e.g., Morowitz, 2002; Rothschild, 2006). Sociologists have studied how personal identity (e.g., Smith, 2010) and social structures (e.g., Abbott, 1995; Sawyer, 2009) are fundamentally emergent properties. Anthropologists have analyzed how humans influence the emergent properties of systems (e.g., Deacon, 2006). In the systems literature, researchers have addressed how emergent properties affect systems (e.g., Checkland, 1999); how a holistic approach can enhance our understanding of systems (e.g., Corning, 2002); and how different structures of constituent elements can give rise to emergent properties (e.g., Senge, 2001). In short, the

study of emergence is extensive in scope, across both the “natural” and “social” sciences.

As noted, there is a relatively consistent conceptualization of emergence as the process through which a *new whole* results from the *interactive combination* of constituent elements, for which the *properties of the whole cannot be explained by the properties of the constituent elements* alone (Broad, 1925; Capra & Luisi, 2014; Deacon, 2006). In short, the emergent whole is more than the sum of its parts. Here we use the term *emergent property* to denote what emerges—the resulting entities, structures, concepts, qualities, capacities, or mechanisms generated through emergent processes (Bhaskar, 1975)—without making assumptions about its nature or constitution. The classical example is the wetness of water, a property not present in either hydrogen or oxygen, from which it is formed. Closer to marketing, an example would be the emergence of brand culture from the interaction of firms, customers, and others.

Emergence: Aspects and issues

There are a number of contentious issues in the emergence literature. Here we will briefly introduce two of the most foundational ones: (1) whether emergence is a fundamentally ontological or epistemological phenomenon or whether there are two distinct types of emergence, and (2) the legitimacy of the concepts of “upward causation” and “downward causation.”

We do this to clarify the position taken in this article, rather than for the purpose of conducting a deep exploration of the issues.

The question of ontological versus epistemological emergence is essentially concerned with whether emergent properties are truly novel and unpredictable or whether their existence, at least in principle, could be reduced to the constituent elements and some set of fundamental laws and therefore predicted, provided we had sufficient knowledge and information (Alexander, 1920). *Epistemological emergence* implies a *reductionist* explanation, in which emergent properties are novel only at the level of description and understanding (Silberstein, 2006). In other words, it is our lack of knowledge of them that causes them to appear to be new—for instance, the idea that chemical phenomena could be fully explained by the laws of physics, though at present we might not fully know how to do that. This implies, in turn, that the *causal capacities*—the ability to influence other elements or systems—of an emergent element can be wholly determined by the intrinsic properties of the system from which they emerged (Clayton, 2006). Pure epistemological interpretations of many human and social phenomena have been particularly problematic. For example, the difficulty of explaining the phenomenon of consciousness, based solely on physiological processes (Bedau, 2008; Chalmers, 2006; Clayton, 2006; Ellis, 2006; McLaughlin, 2008), has been noted as far back as Aristotle. Likewise, academic marketing would be hard-pressed to offer a comprehensive explanation of customer behavior based solely on a psychological stimulus-response model.

Conversely, *ontological emergence* implies that emergent properties are, in fact, truly novel and not reducible to the intrinsic properties of the constituent elements of the systems from which they emerge because “... complex systems are too complex to be explained by reductionistic practices” (Kauffman, 2007, p. 907). It follows that ontological emergentists see emergent phenomena to be *causally empowered* (Clayton, 2006; Goldstein, 1999)—capable of acting on and interacting with other elements—beyond what is directly attributable to the elements of the systems from which they emerged. Thus, emergent phenomena can interact with the other constituent elements of the system from which they emerged. This relational interaction condition is a fundamental principle of ontological views of emergence (DeLanda, 2006).

It is also possible to view epistemological and ontological emergence as separate types, related to phenomena in systems with different degrees of complexity. That is, there might be both *weak* (or epistemological) and *strong* (or ontological) emergence (Capra & Luisi, 2014; Kaufman and Clayton, 2006). We generally assent to this orientation but maintain that, at least in relation to the complex systems which are of interest in academic marketing, *ontological emergence should be assumed*. First, this is because it is unrealistic to expect that

we can conceptualize, measure and compute all of the variables needed to be able to predict the outcome of all possible inter-relationships that might account for emergent properties in complex marketing systems (Davies, 2006), even if in principle that were possible. Second, it is hard to imagine that a phenomenon, such as an instance of customer experience, could be reduced to contextual and physiological variables alone. Finally, the very act of observing complex systems for the purpose of predicting future states changes the nature of the future state (Deacon, 2006; Ellis, 2006; Goldstein, 1999; Goldstein, 2000). Therefore, attempts at prediction lead to indeterminacy.

Emergence is also often characterized by the two related processes of upward and downward causation. *Upward causation*, or *supervenience* (Silberstein & McGeeve, 1999), means that the emergent, higher-order properties depend on (emerge from) the properties and interactions of their lower order constituent elements (McLaughlin, 2008). This implies different *levels of organization* in which wholes at one level (i.e., customers) function as parts at the next (and at all higher) levels (e.g., brand community/culture) (Wimsatt, 1994). In the emergence literature, the notion of dependence of higher-order emergent properties on their lower order constituent elements (i.e., supervenience) is relatively unproblematic.

Downward causation concerns the emergent property acting back upon its constituent elements (Davies, 2006) and this relationship has been considered more problematic because both the bottom-up and top-down causal explanations would then compete with each other (Davies, 2006). That is, the higher-level organization would both cause and be caused by the lower level—e.g., culture caused by and causing the individual customers’ behaviors. However, if upward and downward “levels” are understood as *levels of complexity within a single system*, with parts and wholes mutually constitutive, and if “downward” is understood metaphorically (i.e., such “levels” are analytical perspectives only), the multiple causal explanations no longer compete with each other. This is the approach taken by Silberstein (2006, p. 204), who advocates the notion of systemic causation, based on relatedness and complexity because, “The universe is not ordered as a hierarchy of closed autonomous levels such as atoms, molecules, cells, and the like. Rather, the universe is intrinsically nested and entangled.” As Capra and Luisi (2014, p. 68) similarly state, “in nature there is no ‘above’ and ‘below.’” We concur with these views and propose the interdependent, nested, and overlapping service-ecosystems perspective of S-D logic (as discussed in the next section) as a means of avoiding this problematic conceptualization.

It is important to note that emergence is a systemic phenomenon and critical to the self-organizing processes characteristic of all *complex adaptive systems* (Corning, 2002; Ladyman & Wiesner, 2020). That is, it is a *vital part of the process of adaptation*; it is the *interplay between emergent*

phenomena and system structure that provide the *adaptive, or self-adjusting*, capabilities for these complex adaptive systems. In social systems, these *structures* are usually captured as *institutions* or *institutional arrangements* (sometimes called “institutional logics”), the essential role of which is increasingly becoming accepted and understood in academic marketing (e.g., Dolbec & Fischer, 2015; Humphreys, 2010; Vargo & Lusch, 2016). Self-organization (also referred to as *autopoiesis*, Ladyman & Wiesner, 2020; Merali & Allen, 2011) also involves positive and negative *feedback* (Arthur, 2015; Deacon, 2006), as will be discussed in a later section.

Complex adaptive systems can be seen at various levels of scale, such as molecular, cellular, organ, and bodily systems in biological systems; or customers and firms, “industries” and markets, and general social systems in marketing systems. It is also important to emphasize that emergent properties are not just outcomes of the systems from which they emerge; they become essential constituents in the functioning of the new whole.

Furthermore, the impact of emergent properties is not restricted to the system from which they emerged. They become what Kauffman (1996) calls the *adjacent possible*—new structural elements that can also be appropriated by other systems. This process is known as *exaptation* (Dew et al., 2004), the co-opting of an element with a role in a system for a role (similar or different) in another system. For example, in technological innovation, the exaptation of electrical charges in natural systems takes place when it is applied to lighting and communication technology. Arthur (2009) essentially argues that all technological advancement occurs through this process of exaptation, which he calls *combinatorial evolution*—fundamentally, *newness always emerges from what is*. In the following sections, we further explore the concept, process, and implications of emergence in the context of markets and marketing. To do this, we use an S-D logic theoretical framework.

Advancing emergence in marketing through service-dominant logic

As noted, marketing has been increasingly moving from a one-way, “value-chain” orientation to an interactive, systems orientation. It is a shift with a beginning dating back at least as far as Alderson (1957, 1965), Fisk (1967), Dixon (1967, 1984), and Layton (e.g., 1985), resulting in markets being reconceptualized as “complex social networks of individuals and groups linked through shared participation in the creation and delivery of economic value through exchange” (Layton, 2011, p. 3030). More recently, El-Ansary et al. (2018) have identified this overall systems orientation as the *marketing systems paradigm*, a “fourth paradigm,” following more “traditional,” “micro-focused,” and “boundary expansion” paradigms.

This shift has been both motivated and supported by the reconceptualization of *value* as an outcome of a *cocreation process*, rather than a quality embedded in a product (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004, 2008) – a reconceptualization that has now become pervasive (Bolton, 2020; Kotler et al., 2021). The common implication of these shifts, whether explicitly acknowledged or not, is that the focal phenomena of marketing cannot be understood linearly and deterministically, as implied by more traditional marketing conceptualizations, but must be seen as arising from interactive relationships and therefore as *emergent*.

Drawing on “complexity” to characterize marketing systems is increasingly common in marketing research, which often explicitly adopts *complexity theory*, the study of *complex adaptive systems*, as its systems-thinking foundation. In short, markets and marketing systems are increasingly recognized and characterized as complex adaptive systems (Barile & Polese, 2010; Gummeson, 2006; Holbrook, 2003; Rand et al., 2018; Vargo & Lusch, 2016, Wilkinson & Young, 2005). The same can also be said of the various social systems (e.g., healthcare, technology), in which marketing plays a reciprocal role, such as economic systems. For example, in contrasting a complexity view of the economy with traditional views, Arthur (2015, p. 94) makes three important points: first; “economic functionality is both constrained and carried by networks defined by recurring patterns of interaction among agents;” second, “economic action is structured by emergent social roles and by socially supported procedures—that is, by institutions;” and third; “economic entities have a recursive structure: they are themselves comprised of entities [where] reciprocal causation operates between different levels of organization....” As noted, not only is *emergence* a characteristic of complex adaptive systems; it is a *vital part of the process* of adaptation (Ladyman & Wiesner, 2020).

Emergence is particularly evident, explicitly or implicitly, whenever research accentuates either the positive aspects of marketing activities through *novelty* and *innovation* or when it highlights negative aspects related to marketing conditions, such as *unpredictability*, *uncertainty*, and *risk*. As noted, emergence is regularly acknowledged in the marketing literature in relation to a full range of marketing-related phenomena (e.g., innovation, customer experience, service, value, brand meaning), though in most cases rather casually. More generally, we argue that *all core marketing phenomena* (e.g., value, brand meaning, exchange conventions, etc.) are outcomes of dynamic, interactive processes that are fundamentally emergent in nature.

S-D logic (e.g., Vargo & Lusch, 2004, 2008, 2016) is a theoretical framework especially suitable for explicating the concept of emergence in marketing, as well as for exploring its overall process. We make this claim because, in addition to the reasons cited in the

Table 2 Relationship between S-D logic and emergence

S-D logic	Emergence
Axiom 1: <i>Service is the fundamental basis of exchange.</i>	Service-for-service exchange provides the essential interactions required for emergence.
Axiom 2: <i>Value is cocreated by multiple actors, always including the beneficiary.</i>	The multifaceted and interactional nature of value cocreation implies that it is a systemic phenomenon and thus, emergent.
Axiom 3: <i>All social and economic actors are resource integrators.</i>	Actors participate in the systemic process of creating new resources through the integration (interaction) of existing resources, implying that resources are emergent.
Axiom 4: <i>Value is always uniquely and phenomenologically determined by the beneficiary.</i>	Value is a holistic, experiential outcome of complex interactions within the context of a given system, and thus always emergent.
Axiom 5: <i>Value co-creation is coordinated through actor-generated institutions and institutional arrangements.</i>	Institutions emerge from the interactions between actors and provide both the context and building blocks for further interactions and emergence.
<i>Service ecosystem, self-adjustment</i>	Self-adjustment or self-organization is a basic characteristic of service ecosystems, which implies emergent phenomena.
<i>Service-ecosystem levels</i>	Levels of aggregation are useful for analytical/epistemological purposes by revealing emergent patterns and structures within service ecosystems.

introduction, S-D logic is (1) *indigenous to marketing* (Hunt, 2020) and (2) represents a synthesis of the ongoing reorientations in marketing discussed above, among others. It is also relatively widely accepted. For example, Bolton (2020) claims “...the majority of marketing scholars (some without knowing it) have adopted the theoretical tenets of SDL, with its expansive view of the aggregate marketing system.” Similarly, Kotler et al. (2021) have recently argued that S-D logic “is the ‘grand theory’ of marketing” which underscores its metatheoretical perspective. Being metatheoretical, S-D logic is widely applicable to all kinds of market and marketing-related phenomena in varied contexts (Vargo & Lusch, 2017).

Even though widely applicable, S-D logic is relatively simple. Foundationally, it consists of a small number of concepts, most of which are established in 5 axioms (see Table 2). The key terms are (for more detailed definitions, see the Appendix):

- *Actors*: entities that can integrate resources and engage in service-for-service exchange.
- *Service*: the process of an actor using its resources for another’s benefit.
- *Value*: a change, positive or negative, in the viability or well-being of a system.
- *Institutional arrangements*: sets of interrelated institutions—coordinating mechanisms (e.g., rules,

norms, symbols, etc.)—that enable and constrain value-cocreating actions.

Taken together, these concepts provide the conceptual structure for understanding emergence in relation to marketing phenomena, as well as for elaborating the process. Service-for-service exchange (Axiom 1) provides the essential interactions in value creation. The cocreated origins of value (Axiom 2) imply a network or systemic structure. Resource integration (Axiom 3) identifies the activity that affords service-for-service exchange and also reinforces the network/system orientation. The identification of value as phenomenological, or experiential (Axiom 4), implies that the central outcome of interest is emergent in nature. Finally, institutional arrangements are the actor-generated, emergent structures that facilitate value cocreation through service and resource-integration activities that result in additional emergent phenomena (Axiom 5). In short, S-D logic provides a narrative of *actors engaging in value cocreation by integrating resources and exchanging service, facilitated by emergent, endogenously generated institutions and institutional arrangements, through which nested and overlapping service ecosystems emerge that, in turn, provide the context for additional, emergent iterations of value cocreation*—arguably, the essential focus of markets and marketing.

Importantly, as used in S-D logic, *actor* is a generic term. This is specifically intended to convey an understanding that all systemic actors are fundamentally doing the same things: facilitating the creation of value (for themselves and others) through resource integration and service exchange, even though they are heterogeneous in their specific actions (Vargo & Lusch, 2011). More generally, the actor-to-actor (A2A) orientation does not privilege humans—that is, it acknowledges that things can have agency (Vargo & Lusch, 2017)—thus recognizing social systems as *sociomaterial*.

In S-D logic, the focal sociomaterial system is referred to as a *service ecosystem*, defined as a *relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange* (Vargo & Lusch, 2016, p. 11). Such service ecosystems are nested and overlapping and, at least for analytical (epistemological, as opposed to ontological) purposes, often studied at different levels of aggregation—such as micro (e.g., individual), meso (e.g., markets, communities, industries) and macro (e.g., societal) levels (Chandler & Vargo, 2011). Institutions are the endogenously generated building blocks of such systems (Vargo & Lusch, 2016; see also Ostrom, 2005). This means that institutions—as emergent properties and as context for other emergent properties (Vargo & Lusch, 2014)—are a necessary complement for understanding how marketing phenomena such as the operation of markets and the behavior of actors develop over time. Hence, combining emergence with S-D logic’s previous insights regarding institutionalization affords an understanding of how self-adjusting service ecosystems can develop from ad hoc resource integration and service-for-service exchange.

Marketing is particularly interested in a subset of these nested and overlapping service ecosystems, namely markets. The adaptability and sustainability of these systems require emergence (Ladyman & Wiesner, 2020), usually captured by terms like “innovation,” “novelty,” and “serendipity.” But these emergent properties are initially just potential resources for contributing to adaptability; they acquire their *resourceness* through *institutionalization* and *integration* with other resources (Lusch & Vargo, 2014). In the process, they modify the systems of which they are constituent, which can have both positive and negative effects on the systems and their subsystems. The modified systems also interact with other systems, including those within which they are nested. In short, emergence begets emergence, as part of a never-ending, dynamic process resulting, necessarily, in ever-increasing levels of complexity (West, 2017).

Studying emergence in these dynamic and increasingly complex contexts requires a greater level of conceptual precision regarding the process of emergence than is currently available. Here, complexity theory tells us that emergent

patterns tend to repeat at various levels of scale—that is, that they are fractal. Similarly, S-D logic emphasizes that patterns can be observed at various levels of aggregation by zooming in and zooming out (Chandler & Vargo, 2011). This implies the possibility of a conceptualization of the process of emergence that is generalizable to all marketing phenomena, and an understanding of how—together with processes of institutionalization—emergence can lead to increasingly complex systems, such as markets. Such a conceptualization, in turn, might make it possible to better capitalize on and facilitate these processes for the purpose of market innovation and the mitigation of negative impact. It is to this conceptual task that we now turn using the framework of S-D logic.

The process of emergence in service ecosystems: Four orders

To advance our understanding of the process of emergence in markets and marketing, we propose a dynamic process model, visualized in Fig. 1. While the model is intended to be isomorphic with the process of emergence in general, we focus on its application in the context of resource-integrating actors engaging in service-for-service exchange to cocreate value. The model identifies *four orders of emergence* (i.e., classes of emergent phenomena; Deacon, 2006) within service ecosystems. These orders constitute a typology of emergent phenomena *differentiated by the nature and extent of feedback* between the constituent elements (i.e., interacting actors and resources) and the emergent properties, which is illustrated by an increasing number of links between the two in Fig. 1. The orders account for different dynamics that all contribute to emergent outcomes in service ecosystems. Importantly, the orders should not be thought of as different phases of emergence, since each lower order of emergence is subsumed into, yet remains in operation, at the next order. In other words, the model is additive and grounded in S-D logic’s insight that, while higher orders of system functioning differ in complexity from their lower order constituents, the underlying dynamics co-exist within the overall process of emergence.

The model also acknowledges that what emerges in one order becomes a *potential* constituent element in the next order as well as in other emergence processes through *exaptation* (Dew et al., 2004, see the dashed input/output arrows in Fig. 1). We stress potential, as there is no guarantee that properties emerging at one order will become significant constituents of more complex systems. Finally, it is also important to note that while the starting point for studying emergent phenomena is arbitrary, it necessarily begins in a context consisting of outcomes of previous emergence and institutionalization processes.

Figure 1 also indicates how the orders of emergence interplay with the parallel process of institutionalization,

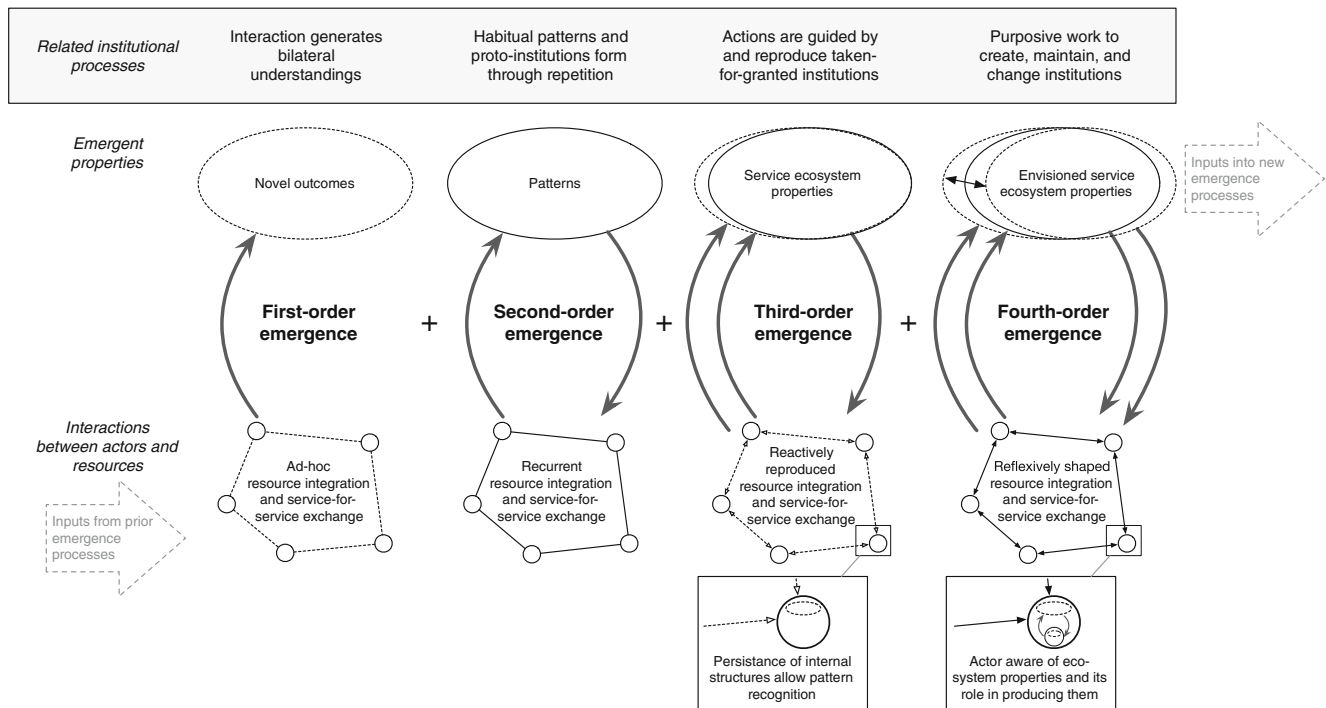


Fig. 1 Four orders of emergence. The main upward and downward arrows represent the interaction between existing constituent elements (actors and resources) and emergent properties that leads to increasingly

complex interrelationships. The interrelationships formed at each order are subsumed into subsequent orders

highlighting their complementarity within the metatheoretical framework of S-D logic. In short, we show how *emergence and institutionalization are co-constitutive processes* in the creation, maintenance, or disruption of complex service ecosystems (e.g., markets). We illustrate our discussion with running examples from the emergence of the local transportation service ecosystem in New York from the 1630s to the present day.

First-order emergence

First-order emergence accounts for *the appearance of novel outcomes from ad-hoc resource integration and service exchange*. This is illustrated in Fig. 1 by the single upward arrow. Here, ad-hoc resource integration and service exchange generate the essential interactions between actors and resources from which novel outcomes can emerge. First-order emergence, thus, operates through *supervenience*; the emergent outcome depends on, but differs from, the constituent elements (McLaughlin, 2008; Silberstein & McGeeve, 1999). At the heart of our model, then, is the basic logic of *combinatorial evolution* (Arthur, 2009). While the same outcome may re-emerge if the actors, resources, and interactions are the same, there is no additional mechanism to sustain regularity; what emerges may therefore be *ephemeral* and lack continuity or stability (Sawyer & Sawyer, 2005). By itself, then, first-order emergence is not capable of generating higher-level, complex structures (Ellis, 2006; Martin &

Sunley, 2012). For this reason, we simply refer to what emerges at the first-order as *novel outcomes*.

One example of a novel outcome arising from resource integration and service exchange would be the farmer, Cornelius Dircksen, who in the 1630’s agreed on an ad-hoc basis to use his small skiff to take passengers across the East River in New York in exchange for shells (Bowery Boys History, 2015; Valentine, 1853). It should be noted that the same emergent property could be realized in several ways using different combinations of resources and interactions (Sawyer, 2005). In our example, “transportation over water” could come about in ways other than “Dircksen using his small skiff in exchange for shells,” such as acquiring and using your own vessel or building a bridge. Each of these would draw upon different resources and resource integration processes to co-create value.

The novel outcomes of first-order emergence critically include *value*—i.e., a change (positive or negative) in the viability of a focal system (Vargo & Lusch, 2014)—but also *resourcefulness* of resources. More generally, the interactions required for ad hoc resource integration and service exchange allow actors to cocreate novel outcomes, which may form the basis for repeated value co-creation. As such, the outcomes of first order emergence can be seen as what is sometimes referred to as “bilateral understandings” in classical works on the origins of institutions (e.g., Berger & Luckmann, 1967) and are therefore possible *predecessors of institutions*, subject to the parallel process of institutionalization.

In summary, first-order emergence accounts for how novel outcomes that depend on, but differ from (i.e., supervene on), the properties and interactions of their constituent elements might arise from ad-hoc resource integration. These outcomes may be either ephemeral or repeated. In accordance with S-D logic, the model posits that novelty is generated through the service-exchange-enabled interactions, rather than through the actions of individual actors or system elements.

Second-order emergence

Second-order emergence introduces a potential for *greater regularity* as the emergent property acts back on (interacts with) its constitutive elements (Goldstein, 1999, 2000). This is illustrated in Fig. 1 by the addition of a downward arrow, reflecting feedback (positive or negative) between the novel outcomes and the resource integration and service exchange that brought them forth in the first place. First-order outcomes (e.g., value-creating activities) thus become part of the context in which actors engage in additional resource integration and service exchange. This closes a feedback loop that enables and constrains how emergent properties reoccur, allowing for patterns of actor behavior to emerge that make interactions more ordered (Fromm, 2005; Martin & Sunley, 2012). The result is a form of self-organization through which some first-order outcomes are repeated while others are not.

It is important to stress that first-order emergence is subsumed into second-order emergence. Taken together, supervenience at the first-order and feedback at the second-order of emergence close a causal loop between the actors and the emergent property, which affords systemic causation (Silberstein, 2006). This creates a qualitatively different source of variation based on the unpredictable dynamics of positive and negative feedbacks (Arthur, 1999), which may either reinforce or weaken first-order emergent properties. This allows for the emergence of endogenously generated, recurrent patterns of resource integration and service exchange that are self-reinforcing (Martin & Sunley, 2012). Continuing our example, after some time as an ad hoc ferrier, Dircksen would allegedly drop whatever other chores he was doing when a prospective passenger sounded a horn he had hung in a nearby tree. Here, first-order emergent outcomes came to coordinate further interactions, encouraging iteration (MacIntosh & MacLean, 1999) and the emergence of spontaneous order (cf. Lansing, 2003) through feedback.

Feedback, then, allows for the formation and diffusion of patterns in a service ecosystem. In our example, since an increasing number of people engaged in service-for-service exchanges of “transportation over water for shells” with Dircksen, he decided in 1642 to undertake ferrying fulltime. This led to the identification of Dircksen as the first New York ferryman and with that (“brand”) identity came expectations about his behavior. Through iteration,

then, common practices are established that can “... endow participants with cultural capital, produce a repertoire for insider sharing, generate consumption opportunities, evince brand community vitality, and create value” (Schau et al., 2009, p. 30). As part of the process of institutionalization, such a pattern would correspond to what Lawrence et al. (2002, p. 7) refer to as a *proto-institution*—a narrowly diffused and weakly entrenched “institution in the making.” That pattern may develop into a full-fledged institution (Vargo & Lusch, 2016), but this is not a given; the properties that result from first- and second-order emergence may either support further institutionalization by reducing variation or disrupt institutionalization by generating novelty through alternative outcomes. In our example, Dircksen was successful, but the services offered by other ferrymen who followed his lead proved unreliable, unsafe, and expensive (Bowery Boys History, 2015).

In summary, second-order emergence explains how actor behavior can *endogenously generate durable patterns of resource integration and service-for-service exchange* that might start to institutionalize (that is, become rules, norms, beliefs, etc.), as indicated in S-D logic (e.g., Vargo & Lusch, 2016). The way actors interact with each other and with the resulting emergent outcomes can generate and reinforce patterns of resource integration and service exchange that result in specific outcomes. As such, second-order emergence also offers an account of how fledgling service ecosystems (markets, marketing channels, brand communities, service platforms, etc.) may emerge among multiple actors engaging in service-for-service exchange.

Third-order emergence

In systems capable of third-order emergence, *actors are able to reproduce their resource integration and service exchange based on emergent patterns*. Such actors exhibit a persistence of internal structures or a type of memory (Ladyman et al., 2013; Martin & Sunley, 2012, see the zoomed-in actor illustration at third-order in Fig. 1) that enables pattern recognition. This in turn allows emergent patterns to be reproduced, which is illustrated in Fig. 1 by the addition of a second upward arrow. Driving this reproduction is the anticipation of consequences of specific interactions (Holland, 1992) and the resulting value creation (Barile & Polese, 2010).

As before, the operation of first-order and second-order emergence is subsumed into third-order emergence. The third-order adds the possibility of second-order emergent patterns (e.g., value, resourceness) being recognized as such and reproduced by the actors (Ellis, 2006; Martin & Sunley, 2012; Vargo et al., 2020). While third-order emergence is characterized by pattern recognition and goal-directed behavior (Ellis, 2006), this behavior is *reactive only*. The patterns of resource integration and service exchange that endure are thus

contingent on the nature of the system and its components (Cuff et al., 2007; Kauffman, 1996, 2007). For example, in 1654 the city of New York reacted to the noted problems associated with the increase in providers of ferry services by issuing licenses to ferry operators. This placed specific requirements on the operators, thus standardizing practices within the fledgling industry and contributing to their institutionalization.

The interplay between third-order emergence and the process of institutionalization can generate *fully-fledged institutions* that coordinate value cocreation. The critical step is the possibility of internalization of emergent structures, which can generate hyper-recurrent behavior (Deacon, 2006). This, in turn, makes those structures appear as “...given, unalterable and self-evident” parts of an external reality (Berger & Luckmann, 1967 p. 59), or in short, as institutionalized service-ecosystem properties (Vargo & Lusch, 2016). For example, by the 1800s the stabilized patterns of ferry transportation in and around New York were perceived as an external and given market by entrepreneurs like Cornelius Vanderbilt. To better compete in this market, they incrementally adjusted their operations by investing in new boats and ferry-technologies (e.g., horse-powered, steam-powered, and double-screw ferryboats). However, all such improvements essentially reproduced the institutionalized solution of ferry transportation.

The internal reproduction of system structure makes resource integration and value co-creation more predictable (Vargo & Lusch, 2016). The combined effect over time of third-order emergence and institutionalization is a growing number of institutional arrangements supporting pattern reproduction over alternative behavior (Vargo et al., 2020). That is, because of the performative effects of institutional arrangements, actions become *quasi-predictable* (Lusch & Vargo, 2014; Vargo, 2018). With third-order emergence, then, we get the full S-D logic narrative of actors engaging in value cocreation by integrating resources and exchanging service facilitated by endogenously generated institutions and institutional arrangements.

But the third order also introduces a *new source of novelty* compared to previous orders. It allows actors to (de)select specific actions based on emergent properties, which may induce further (yet unintended) changes in the system. Such adjustments can *reinforce existing patterns*. For instance, the gradual introduction of ferry services to other destinations around New York from the 1650s onwards established ferrying as a commonly accepted solution for transportation over water. But they can also *weaken existing patterns*. For instance, a toll on ferrying introduced by the British when they took control over the city in 1664 led to a dramatic decline in regular ferry services as people reverted to private ride-sharing and other ad hoc solutions.

In summary, third-order emergence supports institutionalization of value cocreation by allowing reproduction of observed patterns, but also generates imperfections and

unintended consequences in the reproduction of such patterns. Taken together, the first three orders of emergence and the interrelated institutionalization process are enough to account for many marketing-related phenomena, including the formation of markets, the generation and diffusion of innovations, market orientation, the creation of brands, the reactive response to competitors’ pricing, etc. However, to fully account for the complexity of such phenomena, requires a fourth order of emergence.

Fourth-order emergence

Out of the infinite number of possible outcomes of the first three orders of emergence, systems may emerge that are capable of *intentionality beyond reproduction* (Deacon, 2006). To accommodate such systems, we propose a fourth order of emergence at which (some) actors *reflexively shape resource integration and service exchange to influence service-ecosystem properties*. This is illustrated by the addition of a second downward arrow in Fig. 1, which completes a second causal loop so that emergent service-ecosystem properties can form the basis for, and be the subject of, intentional action. This requires actors with the capacity to envision how their interactions with others affect service-ecosystem properties (Ellis, 2006). Both the emergence literature and S-D logic recognize this characteristic as *reflexivity* (Ellis, 2006; Kjellberg, 2019; Martin & Sunley, 2012).

In our model, reflexivity denotes actors’ awareness not only of service-ecosystem properties but also of their own role in producing such properties (see the zoomed-in actor illustration at fourth-order in Fig. 1). Such awareness typically results from a combination of human and non-human elements in a service ecosystem (cf. Barile et al., 2018). The resulting reflexivity allows actors to intentionally shape their interactions with others to change (or maintain) service-ecosystem properties, or in short, engage in service-ecosystem design (Vink et al., 2021). For example, in an attempt to address faltering ferry services around 1700, the city of New York decided in 1708 to grant a charter to one ferry operator giving it the privilege to operate ferries across the East River. This was a drastic intentional effort of one actor to modify the service ecosystem by placing all service provision under the control of a single provider.

As before, the lower orders of emergence are subsumed into the fourth-order emergence. In addition, the outcomes, patterns, and service-ecosystem properties that emerge from the first three orders and that generate observable regularities across many marketing phenomena (e.g., the operation of markets, consumer behavior, pricing, advertising) become subject to intentional shaping. This introduces a new dynamic as a result of reflexive actors engaging in parallel but different efforts to change or maintain service-ecosystem properties (Martin & Sunley, 2012). In our

historical example, there are competing intentional efforts to shape the transportation service ecosystem based on alternative envisioned designs, such as the construction of railroad bridges across and tunnels under the East and Hudson Rivers. Such reflexive shaping may also elicit direct defensive responses from those who seek to preserve the existing system. In the case of the ferry operators in and around New York, many were in fact acquired by the growing railroad companies, who for a time operated both kinds of services. If we fast forward to present time, the reactions of taxi operators to the disruptions caused by Uber and other ride-sharing platforms are an explicit example of such direct defensive responses. As a result, the changes in the service ecosystem at fourth-order supervene on both aligned and conflicting shaping and non-shaping efforts by multiple actors (Vink et al., 2021).

The interrelation between fourth-order emergence and institutionalization is based on the ability of actors to engage in “... conscious effort[s] to transform situations by challenging existing institutions” (Kjellberg, 2019, p. 469). Fourth-order emergence thus provides the necessary conditions for what Lawrence et al. (2011) term *institutional work*—the purposeful creation, maintenance, and disruption of institutions. This is nicely exemplified by how Uber disrupted taxi service provision by removing the need for professional drivers and changing the relationship between drivers and riders by allowing them to interact directly. However, Uber also maintained existing market institutions such as payment per distance traveled, rating of drivers and riders, and electronic payment systems (Vargo et al., 2020). The overall effect on a service ecosystem thus results from complex interrelations between the outcomes of lower orders of emergence (e.g., novel outcomes, recurrent patterns, service-ecosystem properties and/or institutions) and parallel reflexive shaping.

In summary, fourth-order emergence results from actors reflexively engaging in interactions with others to intentionally change (or maintain) service-ecosystem properties. Besides being subject to the dynamics of all lower orders of emergence, service ecosystems that exhibit fourth-order emergence are characterized by supervenience of multiple parallel design efforts. Fourth-order emergence thus adds a critical proactive component to our model, aligning it with S-D logic and its insistence on the primacy of effectual processes over predictive processes (Vargo & Lusch, 2014, p. 243).

Discussion and implications

We maintain that understanding emergence is critical to marketing because markets are themselves emergent phenomena, as are most, if not all, central marketing-related outcomes. Our aim has been to contribute to the marketing discipline by developing a more precise conceptualization of emergence—as

it relates to marketing—that accounts for novel and/or unanticipated outcomes that arise from existing marketing phenomena but are irreducible to them. By combining theoretical insights from the literatures on emergence, complex adaptive systems, and institutionalization, we show how a theory currently adopted in marketing—S-D logic—is able to explicate the concept of emergence in marketing through a broad theoretical framework and a more detailed dynamic process-model based on this framework. Our process model conceptualizes four orders of emergence based on the extent of feedback between the interactions of system elements (e.g., actors and resources) and the outcomes of their interactions (e.g., value-creating activities, service-ecosystem properties). We argue that this model is capable of accounting for the infinite number of properties that can emerge from resource integration and service exchange, including institutions and institutional arrangements, the formation and change of service ecosystems, and the strategic shaping of such systems. By recognizing the interplay between emergence and institutionalization at each order, the model helps explain why, despite their emergent nature, some marketing phenomena can be rather predictable at times. By being based on the metatheoretical framework of S-D logic, the model is capable of integrating insights from a wide range of research streams. Together with the parallel and interdependent process of institutionalization, the model contributes to the understanding of how massive, value co-creation systems (e.g., markets) can develop from foundational processes of resource integration and service-for-service exchange.

In the previous section, we emphasized that each order of emergence introduces a new source of novelty that is directly attributable to the nature and extent of feedback between parts and whole. As sources of novelty, all orders of emergence have a dual character: on the one hand, they constitute engines of innovation, change and potential value; on the other, they are sources of uncertainty, unpredictability, and risk. This dual character is central to the implications of embracing emergence in research and marketing practice alike. In the following sections, these implications are discussed, especially as they relate to innovation and uncertainty. They are also highlighted in Table 3.

Implications for marketing scholarship

As conceptualized above, emergence applies (though is not limited) to all situations in which resource integrating actors engage in service-for-service exchange. In other words, emergence permeates essentially all marketing contexts and phenomena. By identifying four distinct orders of emergence that pertain to such settings the conceptualization offered here allows for a more fine-grained analysis of specific instances of emergence in marketing. Below, we discuss some implications for marketing scholarship related to innovation and uncertainty. These implications cut across essentially all marketing concepts.

Table 3 Implications for research and practice of the four orders of emergence

	First-order emergence	Second-order emergence	Third-order emergence	Fourth-order emergence
Role in informing our understanding of marketing phenomena	How (ephemeral and fragile) novel outcomes arise from ad hoc service-for-service exchange and resource integration.	How service-for-service exchange between actors recurs and gives rise to patterns that produce marketing resources (i.e., brand value, lead users, customer advocates, etc.) and facilitate value co-creation.	How efforts to adapt strategy and tactics to maintain marketing out-comes (e.g., service quality, brand equity) may reinforce or weaken service-ecosystem viability.	How proactive actors can influence and/or disrupt service ecosystems, and how competing efforts of this kind give rise to new dynamics.
Possible research questions related to novelty	How do novel outcomes emerge in specific instances of resource integration and service exchange? Under which circumstances do new outcomes emerge more frequently? When is it meaningful to differentiate between a new outcome (e.g., resourcefulness, value) and a changed outcome? How do we characterize this difference?	How does emergent feedback from novel outcomes support innovation and institutionalization? How do various aspects of the overall context/institutional structure influence specific feedback loops in supporting – or hindering –innovation in service ecosystems?	How do the processes of emergence and institutionalization intertwine in the context of disruptive innovation? Do processes related to supporting disruptive innovations differ from other types of innovations – and if so, how?	How should innovation processes be organized to encourage specific outcomes (e.g., new service ecosystems vs. new system elements)? How should innovation processes be organized to harness the innovative potential of all orders of emergence? How do emergent outcomes of proactive shaping trigger new lower-order emergent processes? How can these dynamics be facilitated or constrained?
Possible research questions related to uncertainty	How does context influence which emergent outcomes will remain ephemeral, and which will become more enduring? Under which circumstances do new outcomes emerge more frequently? What is the role of actor engagement, effort, and other antecedents in the emergence of novel outcomes through resource integration?	How do different types of feedback influence the recurrent production of outcomes? How do contextual aspects influence the formation and operation of feedback loops? How does context influence the operation of self-organization? What is the role of regularity in service-for-service exchange?	What are the dynamics of adaptation and institutionalization in service ecosystems? How sensitive are these dynamics to context and differing characteristics of actors (e.g., with differing resource endowments)? To what extent can one predict actors' behavior based on institutionalization?	In which contexts (e.g., timing, power balance, etc.) is reflexivity more likely to result in viable and sustained change in an ecosystem? What is the relationship between core marketing management processes (e.g., brand management) and uncertainty from continuous emergence? Under what conditions are reflexive engagements likely to produce change in service ecosystems?

Emergence and innovation The emergence of novel outcomes in a system is intimately linked to creativity and innovation. Emergence emphasizes that innovation is not simply a bottom-up result of a creative individual actor, which is subsequently diffused in a wider population (Vargo et al., 2020). Instead, novelty is always co-created; it emerges from and is strengthened by interactions between system elements. We see at least three areas where our model can contribute to further develop research on innovation in marketing.

First, the “process vs. outcome” or “verb vs. noun” dichotomy is prevalent in both innovation (e.g., Garud et al., 2013) and strategy (e.g., Cummings & Daellenbach, 2009) research. By explicitly linking system elements and their interactions, and recognizing the interplay between emergence and institutionalization in the generation of novelty, we seek to reconcile these two facets of innovation. A novel outcome resulting from first-order emergence is typically ephemeral pending the emergence of additional supportive elements, such as the development of shared understandings. At second-order such outcomes may be subject to positive feedback leading to repeated instances of the same outcome, which may then trigger actor adaptations that further stabilize service-exchange (third-order emergence). However, none of these are a given. The process of emergence is genuinely unpredictable and effectual in that it is not driven by predetermined goals or formalized plans of action, but involves continuous learning in response to changes in the environment (Sarasvathy, 2009).

Second, the model, along with the broader theoretical framework, can enrich research on disruptive innovation (Christensen, 1997) by providing a more fine-grained account of how such innovations may arise and succeed. Combining emergence and institutionalization allows us to account for the process through which an emergent technology can gain a foothold in a market niche, how marketing related adaptations can reinforce and further entrench it, making alternatives increasingly unthinkable and gradually leading to the recognition of a novel service ecosystem by the involved actors. But the model can also be used to study how challenges linked to disruptive innovations differ across the orders of emergence. Indeed, the very notion of strategic disruptive innovation emerges only with the fourth order, in which the disruptive scope of an alternative service ecosystem can be perceived by at least some actors, notably those who seek to promote or resist such a change. This is typically not the case at lower orders of emergence, in which disruption is a constant possibility but primarily recognizable in hindsight.

Third, the model, in conjunction with the broader, S-D logic grounded framework offers tools for simultaneously addressing innovation at different levels of aggregation. The innovation literature tends to focus on discrete innovations at specific levels, such as the product or production technology, the firm-specific business model, or the business ecosystem. Few studies “zoom in” or “zoom out” from this focal level to explore its

relations to lower or higher levels of aggregation (Nicolini, 2009; Wieland et al., 2018). Our model explicitly recognizes the interdependence of novelty generation at different levels. For instance, whereas fourth-order emergence draws attention to novel outcomes from purposive attempts to shape markets or service ecosystems (Nenonen et al., 2019; Vink et al., 2021), our model emphasizes that such attempts are also subject to emergence at all lower orders. For instance, the intentional transformation of markets is also subject to adjustments made by other actors (third-order), positive and negative feedbacks that may support or disrupt them (second-order), and the constant emergence of novel outcomes from everyday service-for-service exchange (first-order). Therefore, a major research task ahead is to probe how different orders of emergence interact with each other and with institutionalization as part of innovation processes in service ecosystems.

Emergence and uncertainty The marketing management literature has tended to see predictability as the general case and unpredictability as the exception in contexts relevant to marketing. Embracing emergence implies a reversal making unpredictability the general case and predictability, to the extent that it exists at all, an exception (cf. Read et al., 2009). Here, we offer a robust platform for contemporary marketing scholarship, providing a general process model and broader framework and common terminology without shoehorning inherently uncertain phenomena into deterministic and predictive models. For example, current technological developments related to artificial intelligence algorithms (cf. Rust, 2020) will dramatically increase the number of actors interacting in service ecosystems, which in turn multiplies opportunities for first-order emergence. Hence, as such algorithms become more widespread among marketers (e.g., sales and marketing automation) and customers (e.g., procurement automation and virtual personal assistants) predictability is reduced at all levels of aggregation (e.g., firm, sector, nation-state). In addition to such developments, “exogenous” shocks—emergent at other system levels—such as climate change, geopolitical instability, and pandemics introduce additional uncertainties into existing service ecosystems (Polese et al., 2021).

By recognizing the interplay between emergence and institutionalization our model also accounts for those special cases where marketing phenomena become quasi-predictable. The increasing number of feedback mechanisms between resource-integrating actors and the emergent outcomes that result from their interactions across the four orders of emergence supports iterative and recursive feedback loops that can foster regularity and routinization. At the same time, the logic of emergence continually threatens to disrupt such regularities. The proposed model thus not only allows us to better appreciate the limits of our predictions but also improves our

understanding of the sources of uncertainty at play through the four orders of emergence. This, in turn, suggests an inversion of the relative importance of different types of research questions in marketing. Drawing from the development of entrepreneurship research (Stevenson & Jarillo, 1990; Van Burg & Romme, 2014), we propose that future marketing research needs to address “how” questions (often answered by narrative and actionable knowledge) rather than “why” or “what” questions that presume stable causalities.

In addition to these implications for academic marketing research in general, this explanation of emergence also contributes significantly to the further development of S-D logic. S-D logic scholars (e.g., Vargo & Lusch, 2017) have, for some time, embraced and emphasized its importance but, except for the few studies mentioned, have not explored it extensively. This work more fully explicates the concept of emergence through an S-D logic framework and elaborates its role in the process of value cocreation. For example, of particular note is the interplay between emergence and institutionalization, concepts that have mostly been treated separately in S-D logic. It also points toward a fuller understanding of resource integration as an emergent, rather than a summative, process.

Implications for marketing practice

Embracing emergence and recognizing its interrelations with institutionalization have significant implications for marketing practice. Arguably, none is more fundamental than the need for actors in service ecosystems (marketers, customers, policymakers, etc.) to adopt a drastically different stance regarding certainty and uncertainty in their planning and strategizing. The entrepreneurship literature has usefully argued for the combined use of causal and effectual logics in organizational decision-making. Effectual decision-making allows decision-makers to respond flexibly to changes in their operating environments while causal logic allows them to stay focused and enact strategic plans when regularities permit (Matalamäki, 2017). As we argued above, the latter kind of quasi-predictability is likely to become an even rarer case, given ongoing technological, environmental, social, and political developments and the exponential opportunities for novel outcomes they trigger across all orders of emergence. Hence, the future of marketing is likely to be less rather than more predictable, making an entrepreneurial approach to marketing the general case and managerial approaches applicable only under increasingly rare instances of quasi-predictability (Koskela-Huotari & Vargo, 2018; Vargo & Lusch, 2014).

This shift to a more entrepreneurial approach to marketing, underpinned by emergence, has four implications for marketing practice. First, the interrelations between emergence and institutionalization imply that managers should consider effectuation (Read et al., 2009) as the primary approach for overseeing and strategizing organizational activities. In practice,

this requires letting go (to a certain extent) of managerial control and knowledge. For example, managers may need to allow swift action by their teams in specific task environments even if the underlying processes are not fully understood. In parallel, managers need to control for the possible downside risks and constraints by continually assessing possible changes at each order of emergence. In situations in which institutionalization provides quasi-predictability, traditional marketing management approaches, such as segmenting, targeting, and positioning may still be used, at least as short-run tactics. As a complement, managers should strive to develop an in-depth understanding of the goals of the value-cocreating actors, as this will improve their ability to identify possible adaptations in the service ecosystem. Awareness of the specific conditions for emergence at each order and the current levels of institutionalization within the service ecosystem allows managers to navigate quasi-predictable and unpredictable service-ecosystem characteristics and use appropriate tools and practices. The key question becomes: how does one achieve awareness of the current level of unpredictability? This requires continually gauging the relative importance of each order of emergence in generating novelty, given the stabilizing effect of institutionalization. This will help managers create context-specific indicators to determine whether to opt for nonpredictive or traditional marketing strategies or tactics.

Second, managers should rethink and expand environmental scanning. Emergence requires managers to cover both the “verbs” and the “nouns”—that is, both processes and outcomes. Recognizing and making sense of emergence also necessitates engaging the organization at large in environmental scanning to foster an ability to oscillate between different levels of aggregation (Chandler & Vargo, 2011). This is because emergence cannot be fully understood by only focusing on the emergent outcomes or processes at a particular order. Rather, it is important to consider outcomes at all four orders of emergence, from ad hoc service exchanges to explicit attempts at ecosystem redesign. Much of environmental scanning today focuses on aggregating occurrences at the micro-level (e.g., customer preferences) into macro-level patterns (trends). However, emergence does not follow the logic of aggregation, in which summative effects alone can explain more complex phenomena. Instead, novel properties (e.g., macro-level trends) that emerge from the interactions between system elements (e.g., micro-level customer preferences) must also be strengthened or stabilized by subsequent interactions between system elements (i.e., meso level institutionalization) in order to endure. Environmental scanning should therefore strive to link developments at all four orders of emergence. This will include zooming in on micro-level interactions and zooming out to macro-level context, and connecting these to meso-level organization. Here, the meso level (market, service ecosystem, etc.) should be both the starting point and focus of analysis, as both micro- and macro-level changes and impacts

emanate from the meso level (Arthur, 2015). As the relevant meso level is actor-specific, environmental scanning should be conducted-or at least coordinated-by the focal organization. External agencies and experts can be used to provide specific insights, but the core of the environmental scanning should not be outsourced. For many organizations this may require re-organizing and investing more resource in strategic market and marketing research.

Third, and related, organizations need to capitalize on emergence in relation to innovation. As emergence is always “on,” no managerial effort is needed to initiate or foster it. However, traditional business processes and organizational structures are ill-equipped to capitalize on the fact that innovations may result from all four orders of emergence. Thus, managers need to expand their definitions of innovation to include not only new technology but also, e.g., patterns of resource-integration and service exchange, business models (Wieland et al., 2017), service-ecosystem and market properties (Nenonen et al., 2019, Vargo et al., 2015). Given that emergence is non-linear, managers should also move from time-bound (i.e., annual or quarterly) to continual processes related to strategy, innovation, and business planning – or else the organization runs the risk of being too slow to recognize emergent changes. In practice this could mean moving from annual marketing plans to issues-based marketing strategies. In a similar vein, transitioning to self-organizing teams or otherwise allowing employees high levels of autonomy creates an organization that is better able to deal with change arising at different orders of emergence. However, to be capable of constructively questioning the current status quo of a service ecosystem and envisioning alternative states (fourth-order emergence) requires a vantage point not always available to task-specific teams, especially if these follow functional organizational silos. To fully capitalize on emergence, then, firms need self-organizing teams that span different functions over, for example, the marketing-sales interface or the marketing-R&D interface. Indeed, such teams should not follow current organizational boundaries, which likely reflect previously emergent and institutionalized solutions. Instead, they should involve an expanded network of innovation partners, as implied by concepts such as open innovation, innovation networks or ecosystems. Emergence increases the importance of these notions further, but with a twist: rather than trying to manage suitable innovation partners, firms should encourage others to come to them as “self-selected” innovation companions.

Fourth, the interrelated nature of emergence and institutionalization also has implications for meso-level policy initiatives (by firms and authorities alike). In particular, policymakers should recognize that this relationship creates potential tensions for any policy initiative. While institutions (formal and informal), such as laws, regulations, norms, are necessary for service-ecosystem viability, policymakers must understand that despite however “good” an institution is, emergence is omnipresent. Indeed, the

successful creation of an institution also generates new opportunities for emergence at all four orders. It introduces a new resource that can be creatively combined with existing ones to generate novel outcomes (first-order). It establishes a new conduit for positive or negative feedback that can reinforce or weaken existing patterns of service exchange (second-order). It leads some actors to adjust their current behavior to ensure specific outcomes, which in turn can generate new and unforeseen consequences for the system as a whole (third-order). Finally, it can trigger resistance and concerted efforts by (groups of) concerned actors to explicitly design alternatives (fourth-order). Thus, it is usually just a matter of time before new emergent outcomes come into conflict with existing institutions. This is especially true of rigidly constructed institutions. The implication is that policy initiatives should strive to establish codified institutions that allow flexible adjustment over time and in changing contexts. This echoes Callon’s (2009) proposal that a well-functioning market is one capable of taking care of its own overflows. To improve the resilience of service ecosystems at any scale in the face of severe disruption, it is paramount to ensure processes and structures that allow flexible and responsive adjustment of institutions.

Conclusion

To paraphrase what Venkatesh et al. (2006) said about markets, emergence is everywhere and nowhere in marketing. That is, everyone uses the term, but the underlying concept has received very little scholarly attention. Yet, as we have indicated, if markets are understood as complex adaptive systems (e.g., service ecosystems), emergent phenomena are at the very core of their functioning. By extension, these emergent phenomena (and the underlying processes) become the critical subject matter in the study of markets and marketing. Arguably, they are the same core phenomena academic marketing has been studying through the course of its existence—for example, value, brand meaning, customer experience, etc. What is new here is the suggestion that a systemic perspective, in which emergence is central, sheds new light on the understanding of, and thus the managerial approach to, these core marketing phenomena and related processes.

To approach this perspective-shifting, we have invoked the theoretical framework of S-D logic, which not only is indigenous (to marketing) but also is accommodative of institutional theory, the theory of complex adaptive systems, and the concept of emergence. The purpose has not been a comprehensive treatment but rather to facilitate the nascent extension of marketing theory through the incorporation of emergence theory. We encourage other marketing scholars from varied research streams to contribute to the endeavor.

Appendix

Glossary of terms

Term	Definition	Source
Actor	In service-dominant logic the term refers to any entity capable of acting in the cocreation of value, either positively or negatively valanced. It was originally intended overcome problems with preassigned designations of “producers” and “consumers.” More generally, it is consistent with the use of the term in actor-network theory (ANT), which seeks to redress the common subject-object divide in the treatment of social systems, in which humans do all the acting, by allowing humans and non-humans equal initial weight as actors.	Science & Technology Studies (Latour, 2005) Marketing/service-dominant logic (Vargo & Lusch, 2004, 2011, 2014)
Adaptation	The process of change or alteration through feedback in a system, which is guided by the routines that support system viability.	Biological Anthropology (Deacon, 2006) Applied Mathematics and Physics (Ellis, 2006)
Adjacent possible	The formation of stable patterns from all the ways in which the present can reinvent itself, subject to both the existing limits and the creative potential afforded by change and innovation.	Systems Theory (Kauffman, 1996, 2007)
Base (or basal) elements	Elements of a system/network that form the basis for emergence processes.	Philosophy of Science (Broad, 1925)
Complex adaptive systems (CAS)	Dynamic, open systems that are capable of exhibiting self-organizing and self-adapting behaviors, through feedback. CAS thinking is implied by dynamic conceptualizations of markets, market development and marketing actions and is central to the service-dominant logic understanding of value co-creation.	Systems theory (Barile & Polese, 2010) Marketing/service-dominant logic (Vargo & Lusch, 2011, 2016, 2017)
Complexity theory	The interdisciplinary science that focuses on questions related to complex adaptive systems (CASs). It examines the relationship between unpredictability and order as a result of feedback and amplification.	Systems theory and economics (Goldstein, 1999, 2000)
Constitutive absence	The pull of yet unrealized possibility (i.e., function in biology and purposive action in psychology) which serves as an organizer of thermodynamic processes.	Biological Anthropology (Deacon, 2006)
Downward causation	The controversial term given to actions of an emergent property back upon its constituent elements. See also Systemic Causation.	Philosophy of science/physics (Davies, 2006)
Effectual processes	Processes that allow for new and less stable features to be introduced into a system through iterative institutional work.	Marketing (Sarasvathy, 2009) Marketing/service-dominant logic (Vargo & Lusch, 2014)
Emergence	The process of constituting a new entity with its own particular characteristics through the interactive combination of other, different entities that are necessary to create the new entity but that do not contain the characteristics present in the new entity. The emergent whole is more than the sum of its constituent parts.	Philosophy of science (Broad, 1925) Philosophy of science (Bhaskar, 1975) Sociology (Smith, 2010)
Emergent properties	The entities, structures, totalities, concepts, qualities, capacities, textures, mechanisms, etc. generated through emergent processes.	
Epistemological emergence	The idea that emergent properties are reducible, and novel only at the level of description, thus	British emergentist school (Alexander, 1920) Philosophy of science (Silberstein, 2006)

(continued)

Term	Definition	Source
Institutions/ institutionalization	appearing to be new simply because of our limited knowledge of them. Resilient social structures composed of cultural-cognitive, normative, and regulative elements that help provide stability and meaning to social life. Institutions and institutional arrangements are central in service-dominant logic, which defines them as humanly devised coordinating mechanisms (e.g., rules, norms, symbols, etc.), that enable and constrain value-cocreating actions within and across service ecosystems.	Sociology (Scott, 2014) Sociology (Kerckhoff, 1995) Marketing/service-dominant logic (Vargo & Lusch, 2016)
Institutional arrangements	Sets/assemblages of interrelated institutions that connect and coordinate actors.	
Institutional work	The purposeful creation, maintenance, or disruption of institutions.	Strategic management (Lawrence et al., 2011)
Ontological Emergence	The view that emergent properties are irreducible and do not simply provide new explanations of phenomena but have causal capacities that are novel and unpredictable and are not reducible to the intrinsic properties of their constituent parts.	Philosophy (Clayton, 2006) Systems theory and economics (Goldstein, 1999)
Orders of emergence	Classes of emergent phenomena, which are differentiated by the nature and extent of feedback between the constituent element(s) and the emergent property(s).	Biological anthropology (Deacon, 2006)
Proto-institution	Institutions in the making through new practices, technologies and rules which may become new institutions if they diffuse sufficiently.	Strategic management (Lawrence et al., 2002)
Reductionist	Reductionism maintains that any complex phenomena may be fully explained by simpler or more fundamental objects and laws. Thus, complex phenomena are <i>nothing but</i> the combined effects of simpler fundamentals.	Philosophy (Bedau, 2008) Philosophy (Chalmers, 2006) Philosophy (Clayton, 2006) Applied mathematics and physics (Ellis, 2006) Philosophy of science (McLaughlin, 2008)
Resources	Anything an actor can draw on for support.	Marketing/service-dominant logic (Vargo & Lusch, 2004)
Resource integration	The process of amalgamating resources to create new resources with value-creating potential.	Marketing/service-dominant logic (Vargo & Lusch, 2004)
Reflexivity	The operation of symbolic understanding and the development of intentionality and self-realizing potential. The partial awareness of existing institutional arrangements that acts as a prerequisite for the intentional shaping of such institutional arrangements.	Biological anthropology (Deacon, 2006) Applied mathematics and Physics (Ellis, 2006) Marketing/service-dominant logic (Kjellberg, 2019) Marketing/service-dominant logic (Vink et al., 2021)
Regularity	A system becoming more ordered and organized through the recurrent actions of its constituent elements.	Systems theory (Fromm, 2005)
Service	The application of resources for the benefit of another actor or the actor itself.	Marketing/service-dominant logic (Vargo & Lusch, 2004)
Service-ecosystem	A relatively self-contained, self-adjusting system of resource-integrating actors connected by shared institutional arrangements and mutual value creation through service exchange.	Marketing/service-dominant logic (Vargo & Akaka, 2012)
Sociomaterial systems	A description reflecting a view that the social and the material aspects of a system are inseparable, and thus seeks to examine both aspects of technology and social organization simultaneously. It draws substantially upon core concepts found in actor-network theory.	Technology studies (Orlikowski, 2010) Organizational theory and technology (Leonardi, 2012)
Supervenience		Biological anthropology (Deacon, 2006) Philosophy of science (McLaughlin, 2008)

(continued)

Term	Definition	Source
System viability	A condition in which new emergent properties are dependent upon their lower-order, base elements. The survivability, or well-being, of a system. System viability guides which routines are seen to be desirable (or not) in maintaining a system. In service-dominant logic this is the viability of the service ecosystem and is synonymous with value.	Systems theory (Barile & Polese, 2010) Marketing/service-dominant logic (Vargo & Lusch, 2011)
Systemic causation	Incorporates relatedness and complexity into the understanding of downward causation and emergence, as reality is seen as a system of nested and entangled relations rather than as discrete levels.	Philosophy of science (Silberstein, 2006)
Value	An emergent change in the well-being or viability of a particular system/ actor, which can be positively or negatively valanced.	Marketing/service-Dominant logic (Vargo & Lusch, 2011)
Value co-creation	The process through which multiple actors, often unaware of each other, jointly contribute to an actor's/systems wellbeing.	Marketing/service-dominant logic (Vargo & Lusch, 2004)

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Abbott, A. (1995). Things of boundaries. *Social Research*, 62(4), 857–882.
- Alderson, W. (1957). Marketing behavior and executive action: A functionalist approach to marketing theory. .: Richard D. Irwin, Inc.
- Alderson, W. (1965). Dynamic marketing behavior: A functionalist theory of marketing, Homewood, Ill.: Richard D. Irwin, Inc.
- El-Ansary, A., Shaw, E. H., & Lazer, W. (2018). Marketing's identity crisis: Insights from the history of marketing thought. *Academy of Marketing Science Review*, 8(1–2), 5–17.
- Alexander, S. (1920). *Space, time, and deity*. The Gifford lectures for 1916–1918 (2 vols.), London: Macmillan.
- Arthur, W. B. (1999). Complexity and the economy. *Science*, 284(5411), 107–109.
- Arthur, W. B. (2009). *The nature of technology: What it is and how it evolves*. Simon and Schuster.
- Arthur, W. B. (2015). *Complexity and the economy*. Oxford University Press.
- Arnould, E. J., & Thompson, C. J. (2005). Consumer culture theory (CCT): Twenty years of research. *Journal of Consumer Research*, 31(4), 868–882.
- Barile, S., & Polese, F. (2010). Linking the viable system and many-to-many network approaches to service dominant logic and service science. *International Journal of Quality and Service Sciences*, 2(1), 23–44.
- Barile, S., Lusch, R., Reynoso, J., Saviano, M., & Spohrer, J. (2016). Systems, networks, and ecosystems in service research. *Journal of Service Management*, 27(4), 652–674.
- Barile, S., Piciocchi, P., Bassano, C., Spohrer, J. & Pietronudo, M.C. (2018). Re-defining the role of artificial intelligence (AI) in wiser service systems. In *international conference on applied human factors and ergonomics*, July (pp. 159–170). Springer, Cham.
- Bedau, M. A. (2008). Downward causation and autonomy in weak emergence. In M. A. Bedau & P. Humphreys (Eds.), *Emergence. Contemporary readings in philosophy and science* (pp. 155–188). Cambridge, Massachusetts: MIT Press.
- Berger, P.L. & Luckmann, T. (1967). *The social construction of reality: Everything that passes for knowledge in society*. London: Allen Lane.
- Bhaskar, R. (1975). *A realist theory of science* (3rd ed.). Verso Press.
- Bolton, R. N. (2020). First steps to creating high impact theory in marketing. *AMS Review*, 10(3), 172–178.
- Broad, C. D. (1925). *The mind and its place in nature*. London: Routledge and Kegan Paul.
- Brown, S., Fisk, R., & Bitner, M. (1994). The development and emergence of services marketing thought. *International Journal of Service Industry Management*, 5(1), 21–48.
- Bowery Boys History (2015). Available at: <https://www.boweryboyshistory.com/2015/02/new-yorks-first-ferry-service.html>
- Callon, M. (2009). Civilizing markets: Carbon trading between in vitro and in vivo experiments. *Accounting, Organizations and Society*, 34(3–4), 535–548.
- Capra, F. & Luisi, L. (2014). *The systems view of life: A unifying vision*. Cambridge: Cambridge University Press.
- Chalmers, D.J. (2006). Strong and weak emergence. In Davies, P. & Clayton P. (Eds.), *The re-emergence of emergence: The Emergentist hypothesis from science to religion*, (pp. 244–256). Oxford: Oxford University Press.

- Chandler, J. D., & Vargo, S. L. (2011). Contextualization and value-in-context: How context frames exchange. *Marketing Theory*, 11(1), 35–49.
- Checkland, P. (1999). Systems thinking. In Currie, W. & Galliers B. (Eds.), *Rethinking management information systems: An interdisciplinary perspective*. Oxford: OUP.
- Christensen, C. M. (1997). *The innovator's dilemma: When new technologies cause great firms to fail*. Boston, Massachusetts: Harvard Business Review Press.
- Clayton, P. (2006). Conceptual foundations of emergence theory. In P. Clayton & P. Davies (Eds.), *The re-emergence of emergence: The Emergentist hypothesis from science to religion* (pp. 1–34). Oxford: Oxford University Press.
- Comins, P. A. (2002). The re-emergence of emergence: A venerable concept in search of a theory. *Complexity*, 7(6), 18–30.
- Cuff, J. M., Peirce, C. S., Hegel, G. W. F., & Kauffman's, S. (2007). Complexity theory: A response. *Zygon*, 42(1), 249–255.
- Cummings, S., & Daellenbach, U. (2009). A guide to the future of strategy?: The history of long range planning. *Long Range Planning*, 42(2), 234–263.
- Davies, P.C. (2006). The physics of downward causation. In Clayton, P. & Davies, P. (eds.) *The re-emergence of emergence: The Emergentist hypothesis from science to religion*, (pp. 35–52). Oxford: Oxford University Press.
- Deacon, T. W. (2006). Emergence: The hole at the Wheel's hub. In P. Clayton & P. Davies (Eds.), *The re-emergence of emergence: The Emergentist hypothesis from science to religion* (pp. 111–150). Oxford University Press.
- DeLanda, M. (2006). *A new philosophy of society: Assemblage theory and social complexity*. London: Continuum.
- Dew, N., Sarasvathy, S. D., & Venkataraman, S. (2004). The economic implications of exaptation. *Journal of Evolutionary Economics*, 14(1), 69–84.
- Dewald, U., & Truffer, B. (2011). Market formation in technological innovation systems—Diffusion of photovoltaic applications in Germany. *Industry and Innovation*, 18(3), 285–300.
- Dixon, D. F. (1984). Macromarketing: A social systems perspective. *Journal of Macromarketing*, 4(2), 4–17.
- Dixon, D. F. (1967). A social systems approach to marketing. *The Southwestern Social Science Quarterly*, 48(2), 164–173.
- Dolbec, P. Y., & Fischer, E. (2015). Refashioning a field? Connected consumers and institutional dynamics in markets. *Journal of Consumer Research*, 41(6), 1447–1468.
- Durand, R., & Khaire, M. (2017). Where do market categories come from and how? Distinguishing category creation from category emergence. *Journal of Management*, 43(1), 87–110.
- Ehret, M. (2013). Emergence of business markets: A critical realist foundation. *Industrial Marketing Management*, 42(3), 316–323.
- Ellis, G. F. R. (2006). On the nature of emergent reality. In P. Clayton & P. Davies (Eds.), *The re-emergence of emergence* (pp. 79–110). Oxford University Press.
- Fisk, G. (1967). *Marketing systems: An introductory analysis*. Harper and Row.
- Fromm, J. (2005). Ten questions about emergence. Cornell University open access, [arXiv preprint nlin/0509049](https://arxiv.org/abs/nlin/0509049).
- Fujita, S., Vaughan, C. & Vargo, S. (2018). Service-ecosystem emergence from primitive actors in service dominant logic: An exploratory simulation study. In *proceedings of the 51st Hawaii international conference on system sciences*.
- Garud, R., Tuertscher, P., & Van de Ven, A. H. (2013). Perspectives on innovation processes. *Academy of Management Annals*, 7(1), 775–819.
- Giesler, M., & Fischer, E. (2017). Market system dynamics. *Marketing Theory*, 17(1), 3–8.
- Goldstein, J. (1999). Emergence as a construct: History and issues. *Emergence*, 1(1), 49–72.
- Goldstein, J. (2000). Emergence: A construct amid a thicket of conceptual snares. *Emergence*, 2(1), 5–22.
- Goldstein, J. (2011). Emergence in complex systems. In P. Allen, S. Maguire, & B. McKelvey (Eds.), *The SAGE handbook of complexity and management* (pp. 65–78). Sage Publications.
- Gummesson, E. (2006). Many-to-many marketing as grand theory. In R. F. Lusch & S. L. Vargo (Eds.), *The service-dominant logic of marketing: Dialog, debate, and directions* (pp. 339–353). New York.
- Hietanen, J., & Rokka, J. (2015). Market practices in countercultural market emergence. *European Journal of Marketing*, 49(9/10), 1563–1588.
- Holbrook, M. B. (2003). Adventures in complexity: An essay on dynamic open adaptive systems, butterfly effects, self-organizing order, co-evolution, the ecological perspective, fitness landscapes, market spaces, emergent beauty at the edge of chaos, and all that jazz. *Academy of Marketing Science Review*, 6(1), 1–184.
- Holland, J. (1992). Complex Adaptive Systems. *Daedalus*, 121(1), 17–30.
- Humphreys, A. (2010). Megamarketing: The creation of markets as a social process. *Journal of Marketing*, 74(2), 1–19.
- Hunt, S. D. (2020). Indigenous theory development in marketing: The foundational premises approach. *Academy of Marketing Science Review*, 10(1), 8–17.
- Hunt, S. D., & Madhavaram, S. (2020). Adaptive marketing capabilities, dynamic capabilities, and renewal competences: The “outside vs. inside” and “static vs. dynamic” controversies in strategy. *Industrial Marketing Management*, 89(August), 129–139.
- Jacobides, M. G. (2005). Industry change through vertical disintegration: How and why markets emerged in mortgage banking. *Academy of Management Journal*, 48(3), 465–498.
- Kauffman, S. (1996). *At home in the universe: The search for the Laws of self-organization and complexity*. Oxford University Press.
- Kauffman, S. (2007). Beyond reductionism: Reinventing the sacred. *Zygon*, 42(4), 903–914.
- Kerckhoff, A. C. (1995). Institutional arrangements and stratification processes in industrial societies. *Annual Review of Sociology*, 21(1), 323–347.
- Kjellberg, H., Azimont, F., & Reid, E. (2015). Market innovation processes: Balancing stability and change. *Industrial Marketing Management*, 44, 4–12.
- Kjellberg, H. (2019). Attending to actors and practices: Implications for service-dominant logic. In Vargo, Stephen L., and Robert F. Lusch (eds.) *the SAGE handbook of service-dominant logic* (pp. 466–482). London: SAGE publications.
- Koskela-Huotari, K., & Vargo, S. L. (2018). Why service-dominant logic? In S. L. Vargo & R. F. Lusch (Eds.), *The SAGE handbook of service-dominant logic* (pp. 40–57). Sage Publications.
- Kotler, P., Pfoertsch, W., & Sponholz, U. (2021). *H2H Marketing: The Genesis of Human-to-Human Marketing*. Springer.
- Ladyman, J., Lambert, J., & Wiesner, K. (2013). What is a complex system? *European Journal of Philosophical Science*, 3, 33–67.
- Ladyman, J., & Wiesner, K. (2020). *What is a complex system?* New Haven: Yale University Press.
- Lansing, J. (2003). Complex adaptive systems. *Annual Review of Anthropology*, 32, 183–204.
- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
- Lawrence, T. B., Hardy, C., & Phillips, N. (2002). Institutional effects of interorganizational collaboration: The emergence of proto-institutions. *Academy of Management Journal*, 45(1), 281–290.
- Lawrence, T., Suddaby, R., & Leca, B. (2011). Institutional work: Refocusing institutional studies of organization. *Journal of Management Inquiry*, 20(1), 52–58.
- Layton, R. (1985). Marketing systems in regional economic development. *Journal of Macromarketing*, 5(1), 42–55.

- Layton, R. A. (2011). Towards a theory of marketing systems. *European Journal of Marketing*, 45(1/2), 259–276.
- Leonardi, P. (2012). Materiality, socio-materiality, and socio-technical systems: What do these terms mean? How are they different? Do we need them? In P. M. Leonardi, B. A. Nardi, & J. Kallinikos (Eds.), *Materiality and organizing: Social interaction in a technological world*. Oxford University Press.
- Lusch, R. F., & Vargo, S. L. (2014). *Service-dominant logic: Premises, perspectives, possibilities*. Cambridge University Press.
- Lusch, R. F., Vargo, S. L., & Gustafsson, A. (2016). Fostering a transdisciplinary perspective on service ecosystems. *Journal of Business Research*, 69, 2957–2963.
- MacIntosh, R., & MacLean, D. (1999). Conditioned emergence: A dissipative structures approach to transformation. *Strategic Management Journal*, 20(4), 297–316.
- Malerba, F., & Orsenigo, L. (1996). The dynamics and evolution of industries. *Industrial and Corporate Change*, 5(1), 51–87.
- Martin, D. M., & Schouten, J. W. (2014). Consumption-driven market emergence. *Journal of Consumer Research*, 40(5), 855–870.
- Martin, R., & Sunley, P. (2012). Forms of emergence and the evolution of economic landscapes. *Journal of Economic Behaviour & Organization*, 82(2–3), 338–351.
- Matalamäki, M. J. (2017). Effectuation, an emerging theory of entrepreneurship—towards a mature stage of the development. *Journal of Small Business and Enterprise Development*, 24(4), 928–949.
- McLaughlin, B. P. (2008). Emergence and Supervenience. In M. A. Bedau & P. Humphreys (Eds.), *Emergence. Contemporary readings in philosophy and science* (pp. 81–98). MIT Press.
- Menon, A., & Menon, A. (1997). Environpreneurial marketing strategy: The emergence of corporate environmentalism as market strategy. *Journal of Marketing*, 61(1), 51–67.
- Merali, Y., & Allen, P. (2011). In Allen, P., Maguire, S., and McKelvey, B. (Eds.) *the SAGE handbook of complexity and management* (pp. 31–55). London: SAGE publications.
- Morowitz, H. (2002). *How the world became complex: The emergence of everything*. Oxford University Press.
- Nenonen, S., Storbacka, K., & Windahl, C. (2019). Capabilities for market-shaping: Triggering and facilitating increased value creation. *Journal of the Academy of Marketing Science*, 47(4), 617–639.
- Nicolini, D. (2009). Zooming in and out: Studying practices by switching theoretical lenses and trailing connections. *Organization Studies*, 30(12), 1391–1418.
- Orlikowski, W. J. (2010). The Sociomateriality of organizational life: Considering Technology in Management Research. *Cambridge Journal of Economics*, 34(1), 125–141.
- Ostrom, E. (2005) Doing institutional analysis digging deeper than Markets and hierarchies. In: Menard C., Shirley M.M. (eds) *handbook of new institutional economics* (pp. 819–848). Springer, Boston, MA.
- Peters, L. D., Nenonen, S., Polese, F., Frow, P., & Payne, A. (2020). Viability mechanisms in market systems: Prerequisites for market-shaping. *Journal of Business and Industrial Marketing*, 35(9), 1403–1412.
- Peters, L. D. (2016). Heteropathic versus homopathic resource integration and value co-creation in service-ecosystems. *Journal of Business Research*, 69(8), 2999–3007.
- Polese, F., Frow, P., Nenonen, S., Payne, A., & Sarno, D. (2021). Emergence and phase transitions of service-ecosystems. *Journal of Business Research*, 127(April), 25–34.
- Polese, F., Mele, C., & Gummesson, E. (2017). Value co-creation as a complex adaptive process. *Journal of Service Theory and Practice*, 27(5), 926–929.
- Prahalad, C. K., & Ramaswamy, V. (2004). Co-creation experiences: The next practice in value creation. *Journal of Interactive Marketing*, 18(3), 5–14.
- Rand, W., & Rust, R. (2011). Agent-based modeling in marketing: guidelines for rigor. *International Journal of Research in Marketing*, 28(3), 181–193.
- Rand, W., Rust, R. T., & Kim, M. (2018). Complex systems: marketing’s new frontier. *Academy of Marketing Science Review*, 8(3–4), 111–127.
- Read, S., Dew, N., Sarasvathy, S. D., Song, M., & Wiltbank, R. (2009). Marketing under uncertainty: The logic of an effectual approach. *Journal of Marketing*, 73(3), 1–18.
- Rothschild, L. J. (2006). The role of emergence in biology. In P. Clayton & P. Davies (Eds.), *The re-emergence of emergence: The Emergentist hypothesis from science to religion* (pp. 151–165). Oxford University Press.
- Rust, R. T. (2020). The future of marketing. *International Journal of Research in Marketing*, 37(1), 15–26.
- Sarasvathy, S. D. (2009). *Effectuation: Elements of entrepreneurial expertise*. Edward Elgar Publishing.
- Sawyer, R. K. (2009). The science of social emergence. In G. Trajkovski & S. Collins (Eds.), *Handbook of research on agent-based societies: Social and cultural interactions* (pp. 1–16). IGI Global.
- Sawyer, R. K. (2005). *Social emergence: Societies as complex adaptive systems*. Cambridge University Press.
- Sawyer, R. K., & Sawyer, R. K. S. (2005). *Social emergence: Societies as complex systems*. Cambridge University Press.
- Schau, H. J., Muñoz Jr., A. M., & Arnould, E. J. (2009). How brand community practices create value. *Journal of Marketing*, 73(5), 30–51.
- Scott, W. R. (2014). *Institutions and organizations: Ideas, interests, and identities* (4th ed.). Sage.
- Senge, P. (2001) Comments on illuminating the blind spot: leadership in the context of emerging worlds. Available at <http://www.dialogonleadership.org/SengeComment.html>
- Silberstein, M., & McGeeve, J. (1999). The search for ontological emergence. *The Philosophical Quarterly*, 49, 182–200.
- Silberstein, M. (2006). In defense of ontological emergence and mental causation. In P. Clayton & P. Davies (Eds.), *The re-emergence of emergence* (pp. 203–226). Oxford University Press.
- Skälén, P., Aal, K. A., & Edvardsson, B. (2015). Cocreating the Arab spring: Understanding transformation of service systems in contention. *Journal of Service Research*, 18(3), 250–264.
- Smith, C. (2010). *What is a person?* University of Chicago Press.
- Sprong, N., Driessen, P. H., Hillebrand, B., & Molner, S. (2021). Market innovation: A literature review and new research directions. *Journal of Business Research*, 123, 450–462.
- Srinivasan, R., Lilien, G. L., & Rangaswamy, A. (2006). The emergence of dominant designs. *Journal of Marketing*, 70(2), 1–17.
- Stevenson, H. H., & Jarillo, C. (1990). A paradigm of entrepreneurship: Entrepreneurial management. *Strategic Management Journal*, 11(5), 17–27.
- Taillard, M., Peters, L., Pels, J., & Mele, C. (2016). The role of shared intentions in the emergence of service-ecosystems. *Journal of Business Research*, 69, 2972–2980.
- Van Burg, E., & Romme, A. G. L. (2014). Creating the future together: Toward a framework for research synthesis in entrepreneurship. *Entrepreneurship Theory and Practice*, 38(2), 369–397.
- Valentine, David T. 1853. *History of the City of New York*. New York: Putnam & Co. <https://books.google.se/books?id=33F3db4E7UQC>
- Vargo, S. L. (2018). Service-dominant logic: Backward and forward. In S. L. Vargo, & R. F. Lusch (Eds.), *The SAGE handbook of service-dominant logic* (pp. 720–739). Sage Publications.
- Vargo, S. L., & Akaka, M. A. (2012). Value co-creation and service systems (re) formation: A service-ecosystems view. *Service Science*, 4(3), 207–217.
- Vargo, S. L., & Lusch, R. F. (2004). Evolving to a new dominant logic for marketing. *Journal of Marketing*, 68(1), 1–17.

- Vargo, S. L., & Lusch, R. F. (2008). Service-dominant logic: Continuing the evolution. *Journal of the Academy of Marketing Science*, 36(1), 1–10.
- Vargo, S. L., & Lusch, R. F. (2011). It's all B2B...and beyond: Toward a systems perspective of the market. *Industrial Marketing Management*, 40(2), 181–187.
- Vargo, S. L., & Lusch, R. F. (2014). Inversions of service-dominant logic. *Marketing Theory*, 14(3), 239–248.
- Vargo, S. L., & Lusch, R. F. (2016). Institutions and axioms: An extension and update of service-dominant logic. *Journal of the Academy of Marketing Science*, 44(1), 5–23.
- Vargo, S. L., & Lusch, R. F. (2017). Service-dominant logic 2025. *International Journal of Research in Marketing*, 34(1), 46–67.
- Vargo, S. L., Akaka, M. A., & Wieland, H. (2020). Rethinking the process of diffusion in innovation: A service-ecosystems and institutional perspective. *Journal of Business Research*, 116, 526–534.
- Vargo, S. L., Wieland, H., & Akaka, M. A. (2015). Innovation through institutionalization: A service-ecosystems perspective. *Industrial Marketing Management*, 44, 63–72.
- Vink, J., Koskela-Huotari, K., Tronvoll, B., Edvardsson, B., & Wetter-Edman, K. (2021). Service-ecosystem design: Propositions, process model, and future research agenda. *Journal of Service Research*, 24(2), 168–186.
- Venkatesh, A., Peñaloza, L., & Firat, F. (2006). The market as a sign system and the logic of the market. In Lusch, R. & Vargo, S. L. (Eds.), *The service-dominant logic of marketing: Dialog, debate, and directions*, Armonk, NY: M.E. Sharpe.
- West, Geoffrey (2017), *Scale: The universal laws of growth, innovation, sustainability, and the pace of life in organism, cities, economics, and companies*. New York: Penguin.
- Wieland, H., Hartmann, N., & Vargo, S. (2017). Business models as service strategy. *Journal of the Academy of Marketing Science*, 45(6), 925–943.
- Wieland, H., Vargo, S., Akaka, M., & Barbeau, B. (2018). A unifying perspective for the technological, business model, and market aspects of innovation. In S. L. Vargo & R. F. Lusch (Eds.), *The SAGE handbook of service-dominant logic* (pp. 508–521). Sage Publications.
- Wilkinson, I. F., & Young, L. C. (2005). Toward a normative theory of normative marketing theory. *Marketing Theory*, 5(4), 363–396.
- Wilkinson, I. F., & Young, L. C. (2013). The past and the future of business marketing theory. *Industrial Marketing Management*, 42(3), 394–404.
- Wimsatt, W. C. (1994). The ontology of complex systems: Levels of organization, perspectives, and causal thickets. *Canadian Journal of Philosophy*, 24(1), 207–274.
- Zhang, J. Z., & Chang, C. W. (2021). Consumer dynamics: Theories, methods, and emerging directions. *Journal of the Academy of Marketing Science*, 49(1), 166–196.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.