INTRODUCTION: HOW DOES NOVELTY EMERGE?

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Abstract

In this introductory chapter, we clarify how contemporary organizational scholars view emergence and novelty. As the use of these terms has grown, their meanings have become increasingly diffuse. In response, we explicate three lenses that tease out core distinctions between different philosophical and theoretical approaches to studying emergence. Each of the three lenses, which we call respectively *spatial emergence*, *relational emergence*, and *temporal emergence*, is based on a unique pairing of underlying assumptions about the exogenized or endogenized nature of both space and time. Each also has particular implications for practitioners seeking practical insights into emergence, and for researchers conducting studies on emergence. In addition, we introduce the chapters in this volume, which offer a variety of philosophical, theoretical, and empirical perspectives on the theme of novelty emergence. In introducing the chapters in Part I, which engage directly with this theme, we emphasise the interplay between the three lenses. The remaining chapters in Part II address developments more generally in the domain of process organization studies.

Spence Silver, a Senior Chemist working in 3M's Central Research Labs, stumbled upon a novel substance back in 1970 that eventually led to Post-it® Notes. "I was doing some experiments with an interesting new polymer system. When I looked at it under the microscope, it was beautiful! Little crystalline-like spheres. The first time I saw it, I said, 'This has got to be something.' Then I started telling people about it. If your ideas are never exposed to public view, then it's kind of a moot point. I mean, who would care? You say you're creative and have all these creative ideas, but the process is not creative until it becomes something that people can use, something that becomes part of the culture, so to speak. One of the things I've had trouble illustrating and convincing people of is the process that occurred from the discovery of the microsphere adhesive to the production of the actual Post-it® Notes. The whole process took about 12 years. The discovery sort of starts the ball rolling. Things build up and you begin to see the options that this discovery creates. It really takes a bunch of individuals to carry it through the process." (Excerpted from an interview of Spence Silver conducted by Lindhal, 1988).

Wayne McGregor is a multi-award-winning choreographer who has established a reputation for creating dance that can touch audiences in novel and unexpected ways. His ground-breaking work draws inspiration from sources as diverse as the visual arts and neuroscience, and appears to be improvised in the moment although it is, in fact, fully choreographed. McGregor achieves this sense of free-flowing movement by drawing on what he describes as the "kinaesthetic intelligence" of his dancers. In a recent TED talk, he described the three techniques he uses to develop and extend "the technicities of creativity" that constitute kinaesthetic thinking in his troupe. Firstly, he uses a "body to body transfer" technique where aspects of his embodied expression of some "mental architecture" are grasped by other dancers, who then generate their own expressions of the movement. Secondly, he uses the dancers "as architectural objects to think with". As they enact his instructions, they reveal new thinking. And finally, he uses a "task-based method where dancers have the autonomy to make all the decisions themselves", so it is their shared thinking that shapes the dance. For him, novel ideas emerge neither through intuition nor divine inspiration, but rather through fast-paced participatory activity. (Excerpted from McGregor's demonstrative TED talk http://on.ted.com/McGregor)

These two vignettes describe very different situations: one concerns product innovation in the context of scientific breakthroughs, while the other describes the development of improvisational dance forms in choreographed performance. Both, however, revolve around the emergence of novelty. For both, it is through interactions that previously unanticipated ideas are generated and developed. Neither breakthrough nor inspiration is enough; something, some tangible artefact such as a new type of glue or a world premiere performance, must be produced; some 'thing' is emergent.

The notion of emergence is well established in organization studies (Langley, Smallman, Tsoukas, & Van de Ven, 2013). For instance, Mintzberg & Waters (1985) suggested (somewhat provocatively at the time) that strategy might be more usefully understood as emergent, an idea that has continued to ripple through the strategy literature as interests have turned increasingly towards the practices and processes of strategizing (Chia & Holt, 2009). More recently, scholars have examined emergence in a variety of contexts including new organizational forms (Chiles, Meyer, & Hench, 2004; Fiol & Romanelli, 2012), improvised actions in organizational crises (Roux-Dufort & Vidaillet,

2003), the institutionalization of values practices in organizations (Gehman, Treviño, & Garud, 2013), discursive identities (Ellis & Ybema, 2010; Ibarra, Kilduff, & Tsai, 2005), and roles in the processes of identity construction (Simpson & Carroll, 2008). In the innovation literature in particular, the notion of emergence is key to understandings of sustained product innovation (Dougherty, 2008; Garud, Gehman, & Kumaraswamy, 2011), knowledge-based innovation (Anand, Gardner, & Morris, 2007), new knowledge creation (Stacey, 2000; Tsoukas, 2009), regional development (Powell, Packalen, & Whittington, 2012), and National Innovation Systems (Sharif, 2006).

Emergence, and by implication novelty, is clearly a useful term for organizational scholars, but what exactly does it mean? In this introduction, we explore the various ways in which this rather slippery term has been used. Our analysis identifies three distinct lenses for studying emergence, which we call *spatial emergence*, *relational emergence*, and *temporal emergence*. Each lens builds on a unique combination of ontological and epistemological commitments to space and time, and has particular implications for both research and practice. In this, we have been guided by Harvey (1991, p. 205) who suggests that "[h]ow we represent space and time in theory matters, because it affects how we and others interpret and then act with respect to the world". We begin with a brief look at the history of emergence as a theoretical concept, showing how contemporary understandings have been shaped by earlier scientific and philosophical debates. We then go on to elaborate the three lenses and what they imply for research and practice, before introducing the chapters of this volume.

WHAT DOES EMERGENCE MEAN?

This word first entered the scientific vocabulary in the mid-19th century as a necessary adjunct to evolution theory. Although valued for its explanation of the continuity of species, evolution theory also needed a way of engaging with discontinuities that introduce novelty and change into evolutionary processes (Morgan, 1923). Early advocates of emergence, both in the physical sciences and in matters of human experience, included John Stuart Mill, George Henry Lewes, Wilhelm Wundt, Henri Bergson, Alfred North Whitehead, and George Herbert Mead. They eschewed 'vitalist' explanations of emergence, where unexplained events were attributed to an extra-natural, extra-scientific force, some invisible spirit that mysteriously animates life. But equally, they distanced themselves from the excessively reductionist and mechanistic thinking dominant in science at that

time. In arguing for a theory of emergent evolution for example, Morgan sought to go beyond these two opposing logics by elaborating a "constructive philosophy [that] is more than science", but which is "founded on philosophic considerations only" (1923, p. 2). In so doing, he explicitly rejected both vitalist and mechanistic perspectives:

> " … that [emergence] can only be explained by some chemical force, some vital élan, some entelechy … seems to us to be questionable metaphysics" (1923, pp. 8-9)

> " … the whole doctrine of emergence is a continued protest against mechanical interpretation, and the very antithesis to one that is mechanistic. It does not interpret life in terms of physics and chemistry. It does not interpret mind in terms of receptor-patterns and neurone-routes. Those who suppose that it does so, wholly misapprehend its purport." (1923, pp. 7-8)

The classic definition of emergence is usually attributed to Lewes (1875) who distinguished between "resultant" and "emergent" compounds produced in chemical reactions. Whereas the properties of a "resultant" may be predicted from its chemical components, those of an "emergent" are irreducible to these component parts. So, for instance, the properties of water (H_2O) cannot be deduced from the properties of hydrogen (H) and oxygen (O) as discrete elements. From this perspective then, emergence is understood as "properties at a certain level of organization which cannot be predicted from the properties found at lower levels" (Emmeche, Køppe, & Stjernfelt, 1997, p. 83).

This irreducibility of properties seems to imply that it is possible to get 'something' out of 'nothing', which is problematic because it violates the logic of nested levels that underpins classical systems thinking (El-Hani & Pihlström, 2002). Various philosophical arguments made in attempts to remedy this problem have ultimately proven unsatisfactory. Furthermore, as scientific discovery has progressed, many previously unpredictable phenomena have come to be well understood. This has led some to suggest that emergence is merely a temporary explanation, a black box, that will eventually be unravelled by better science (Emmeche, et al., 1997; Osberg, Biesta, & Cilliers, 2008). By the end of the 1920s then, emergence had almost disappeared from scientific writing. It was not until the 1980s that complexity science brought emergence back as a topic worthy of further exploration (Holland, 1998), and scholars began to think about the instruments (theories, assumptions) they use to

extract meaning from empirical experience as themselves continuously emergent within our tangled relational complexes (Barad, 2007).

THREE CONTEMPORARY PERSPECTIVES ON EMERGENCE

Throughout the 20th century, the rigidity of positivistic assumptions in research slowly eased, opening up possibilities for alternative philosophical framings of emergence. However, the co-existence of multiple frames has increased the potential for confusion due to the various different meanings now attributed to this term. We endeavour here to reduce this confusion by articulating three different lenses that, we argue, are evident in contemporary scholarship on emergence. Each lens is identified in terms of its underlying assumptions about space and time, and whether these aspects of context are externalised or endogenous to the perspective it offers on emergence.[1] Inevitably, in making our argument, we have had to simplify the various contributing theoretical positions, deliberately providing only an indicative rather than an exhaustive overview of the rich literature streams we introduce. We readily acknowledge that the boundaries we draw are necessarily permeable and should not be taken as sharp demarcations, but nevertheless, the three lenses do offer a useful way of framing contemporary writing on emergence.

Lens 1: Spatial Emergence

This perspective is best exemplified by the work of Complex Adaptive Systems theorists whose thinking has become increasingly evident in organization studies over the past several decades (e.g. Boisot & McKelvey, 2010; Brown & Eisenhardt, 1998; Marion, 1999; Wheatley, 2006). Drawing on the work of theoretical biologists such as Stuart Kauffman and Brian Goodwin, emergence is conceived as "the arising of novel and coherent structure, patterns and properties during the process of self-organization in complex systems" (Goldstein, 1999, p. 49). Consistent with Lewes' classic definition, complexity theorists have generally taken a structural view that focuses on the emergence of phenomena at macro-levels of a system, but these phenomena are now accounted for at the micro-level in terms of the interactions of autonomous agents over time.

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[1] Garud and Gehman (2012) have considered similar lenses to explicate different kinds of sustainability journeys.

Such complex interactions exhibit nonlinear dynamics that invite stochastic agent-based modelling, where atomistic agents are visualized as distinct from, and operating within fitness landscapes (Levinthal, 1997). Agents do not derive agency from the networks they are a part of, nor do they possess any capacity to directly influence their fitness landscapes (Anderson, 1999). Whereas the classical formulation of emergence tends to be static in its focus on macro- and micro-level properties, complexity science recognizes the dynamical qualities of movements and interactions at micro-levels of the system as they unfold over time. It is these movements that are the source of emergent novelty (Goldstein, 1999).

We call this lens *spatial emergence* because both space and time are treated as aspects of context that are independent of, and exogenous to, actors' knowledge of them. Emergence occurs within, rather than with, this externalised container, and is evidenced by the appearance of novel properties at macro-levels of the container/system, which could not have been anticipated from preceding events. The processual nature of emergence in this view is represented as changes that occur between one period of observation and the next. These changes are located within the passage of time, which proceeds independently of the unfolding actions. This perspective is thus informed by a realist ontology and a representationalist epistemology that considers knowledge to be 'out there' independent of the actors who are involved. Representations of objects and concepts, although acknowledged by complexity theorists to be imperfect (Cilliers, 1998), help us understand how the world really is, and to bring our knowledge of the world into some correspondence with the truth of reality. The assumptions of this lens may be summarized as follows:

	Space	Time
Lens 1 Spatial Emergence	An exogenous structure within which emergence is contained - Formulated in terms of the properties of higher and lower system levels - Emergent properties are irreducible to the properties of other levels - Properties are spatial representations that are taken to be objectively given - Focus on 'what' is emergent - Actors are separate from context	An exogenous variable against which emergence can be tracked - Spatialised (clock) time ticks inexorably and independently of the system - Emergence is defined as changes between t_n and t_{n+m} - Focus on 'when' - Emergence is evidenced by properties that cannot be predicted from preceding conditions

Lens 2: Relational Emergence

Another way to understand emergence is to adopt a flat (i.e. non-hierarchical) ontology that collapses the multiple, discrete levels characteristic of systems thinking into a pervasive and intricate network. Actor-network theory is one such perspective (Callon, 1986; Latour, 2005). Here, actors are not atomistic agents working within contexts; rather agency is distributed across social and material arrangements, or "agencements" in Callon's (2005) words. As Callon explained (1986, pp. 8-9), "[t]he agent is neither immersed in the network nor framed by it; in other words, the network does not serve as context. Both agent and network are, in a sense, two sides of the same coin."

From this perspective, "entities take their form and acquire their attributes as a result of their relations with other entities" (Law, 1999, p. 3). This implies that the meanings ascribed to entities, which may be either human or non-human actants, emerge semiotically out of their relationality. Highlighting translation (Callon, 1986; Czarniawska & Sevon, 1996) as a core mechanism underlying emergence, Law observed, "[t]o translate is to make two words equivalent. But since no two words are equivalent, translation also implies betrayal: 'traduction, trahison'. So translation is both about making equivalent, and about shifting. It is about moving terms around, about linking and changing them." (Law, 1999, p. 3).

Callon (1986, p. 196) underscored that "translation is a process, never a completed accomplishment". Here, unanticipated emergents arise performatively. There are unintended consequences of any framing (i.e., misfires or overflows) as felicitous conditions are not met (Callon, 2010). With each misfire, subsequent accommodations and adjustments have to be made. Consequently, performativity is discernable as an unfolding process in which actors and their environments emerge simultaneously (see also Tsoukas & Dooley, 2011).

Based on this relational dynamic, emergence is perceived through Lens 2 as a process that unfolds across a network of relationships. The unfolding translations create entanglements (Callon & Latour, 1981, p. 283) between social and material elements that afford a distributed collective the ability to act. Any apparent sense of closure, however, is illusory, as there are always forces for change brewing under the surface, setting the stage for further translations. In this way, emergence is an on-going relational process. Actors gain knowledge not through passive observation, but rather

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through their active engagement with a process that unfolds over chronological time, which continues ticking independently of the underlying translations involved. The assumptions of this lens may be summarized as follows:[2]

		space	Time
Lens 2 **Relational Emergence**		An endogenous network that is co-emergent with, and inseparable from actants • Relational space that transcends the actant/context dualism • Focus on 'how' emergence happens through translation • Focus on interactions between actants and semiotically mediated meaning-making	An exogenous variable against which emergence can be tracked • Spatialised (clock) time ticks inexorably and independently of the network • Emergence is defined as changes between t_n and t_{n+m} • Focus on 'when'

Lens 3: Temporal Emergence

So far, we have considered two perspectives on emergence – one where complex interactions at a lower level generate new properties at a higher level, and the second where novelty unfolds laterally across tangled networks of relations. A third perspective on emergence is based on process philosophies that endogenize not only relationality but also durée (Bergson, 1911/1998), or temporal experience, which we take as pertaining to the human sphere of living. Drawing on Bergson's view of concrete duration, Guerlac (this volume) notes that we know concrete time "from the inside, *as it happens*. It is not a container separate from its contents. We experience it when we attend to the qualities of things, to *how* things happen, in their brightness, their tone, their grace or awkwardness". Barad similarly rejects the 'container' metaphor, preferring to understand matter-in-motion in terms of the dynamic and changing topology of spacetime. For her it is the "dynamic intra-play of indeterminacy and determinacy [that] reconfigures the possibilities and impossibilities of the world's becoming" (2007, p. 225).

The temporal approach of this lens focuses on different ways in which the past, present and future are entwined and mutually reconfigured, as explicated by philosophers such as Bergson, Whitehead, Mead, Heidegger and Ricoeur. For Ricoeur (1984), the configured present is forged by prefigured memories and imagined refigurations. Consequently, different imaginaries and memories

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[2] We have deliberately used a small letter case for 'space' to highlight that it is not exogenous to actors.

will generate different experiences of the present. Similarly for Mead (1932), the present is itself emergent in the interplay (or "intra-play" in Barad's words) between pasts and futures that are continuously constructed and reconstructed in the activities of everyday living (Simpson, 2014). For him, the present is a turning point in the unfolding of action. In this, Mead's ideas resonate with Morgan who explained "the emergent step … is best regarded as a qualitative change of direction, or crucial turning point, in the course of events" (1923, p. 5). Without such turning points to punctuate the flow of action, the present, as conceived by Mead, cannot be experienced.

Philosophically, this lens is concerned more with different ways of participating in an ongoing, unfinished world than with discovering the realities of an already complete and stable world.

> "[W]e cannot have knowledge *of* our environment, once and for all – it is not something we can see, something to look at. Rather, it is something we have to actively feel our way around and through, unendingly. Why unendingly? Because in acting, we create knowledge, and in creating knowledge, we learn to act in different ways and in acting in different ways we bring about new knowledge which changes our world, which causes us to act differently, and so on, unendingly. There is no final truth of the matter, only increasingly diverse ways of interacting" (Osberg, et al., 2008, p. 223).

El-Hani & Pihlström (2002) suggest that for this perspective, the strong ontological realism of Lens 1 is inadequate. They propose "pragmatic realism" as an alternative that is deeply rooted in the pluralistic, anti-reductionist and context-sensitive thinking of the American Pragmatists, especially James, Dewey and Mead. The pragmatists understood the apprehensible world as already formed and continuously *becoming* through human practices of inquiry (see also Mesle, 2008; Tsoukas & Chia, 2002), where it is the practical consequences of actions rather than any sense of an absolute 'Truth' that matters. Ontological and epistemological commitments are thus inseparable in spacetime, and are necessarily tied to the human purposes and interests that they serve.

For Lens 3 then, space and time are mutually constituting entanglements in the unfolding topology of spacetime. Emergence is understood as an open-ended and continuous process that is sensitive to the ongoing interplay between actions and situations in spacetime. Representations of objects play an important role in this process, but more as temporary placeholders, "things" that exist as "doings" Shotter (2013, p. 33) in the ongoing flow of practice. As such, they may be understood as

semiotic tools that help us abductively imagine what may emerge in various futures (Peirce, 1965, pp. 5.358-387)[3] by inviting alternative and fluid interpretations of objects and their histories. The assumptions of this lens may be summarized as follows:

	spacetime
Lens 3 **Temporal Emergence**	A dynamic topology of tangled spacetime threads that emerges through and with lived experience • A 'becoming' ontology; pragmatic realism • Temporal weaving of past and future together to construct present experiences • Selves and situations are continuously and mutually emergent • Focus on human inquiry and the 'how' of emergence • The present is an always emergent movement towards abductively anticipated futures; without emergence, there can be no experience of the present • Semiotically mediated meaning-making

IMPLICATIONS FOR RESEARCH AND PRACTICE

We have explicated three different lenses that embrace the notion of emergence in distinctive ways. In all three, emergence is understood as a 'process', but precisely what 'process' means is different in each case. In this section, we highlight some implications for researchers and practitioners who are informed by one or other of these lenses.

Implications of spatial emergence

For the first lens, process implies an unfolding over chronological time, and within a systemic structure of embedded levels. It is through the complex interactions between agents operating at micro-levels that novelty emerges at macro-levels. From this perspective, Wayne McGregor's studio provides a contextual container, an "interactional frame" in Sawyer's terms (2005, p. 210), within which the members of his troupe can create and explore novel forms of dance. Similarly, the Central Research Labs at 3M represents a container that made it possible for Spence Silver to experiment with new polymers to produce a new substance with unexpected properties.

Researchers who conduct studies through this lens depart from variance theorizing, which tries to establish necessary and sufficient causation between independent and dependent variables (Langley, 1999; Mohr, 1982). Instead, they are likely to be concerned with identifying structures, and tracing the patterns of micro-level movements that produce unanticipated, and unanticipatable,

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[3] Refers to the Collected Papers, volume number.paragraph number(s)

macro-level phenomena. Reflexivity is not prioritized, and agents are assumed to be discrete entities that interact with each other in somewhat mechanical rather than relational ways.

This perspective suggests that novelty may be cultivated by facilitating interactions between parts of a system. For instance, Dooley and Van de Ven (1999) noted that a causal system can be characterized by a "dimensionality space" that represents the degree of freedom available to actors for strategic choice. If the dimensionality space is small (i.e. there are many constraining rules), there is little freedom to manoeuvre. Such systems are governed by an equilibrating tendency – any perturbation to the system sets in motion counter reactions that bring the system back into equilibrium. In contrast, if the dimensionality space is large (i.e. few rules), fragmentation may occur. Research has suggested that the dimensional space may be so designed that a system operates at the 'edge of chaos' (Brown & Eisenhardt, 1998; Stacey, 1995).

Implications of relational emergence

The second lens moves away from methodological individualism, suggesting instead a distributed view on agency. It is not sufficient to look at the attributes and behaviours of individual actors in isolation from the arrangements that afford them the capacity to think and act. At any point in time, it is the performative effects of these arrangements that drive the emergence of novelty.

Rather than shifting from one state of equilibrium to another, process from a relational perspective implies a series of on-going translations as heterogeneous elements become entangled with one another. People may be purposive, but given the distributed nature of agency, serendipity and disruption are part and parcel of any unfolding process. Artefacts enable, constrain and perform in their own ways, and consequently are constitutive of agency. At the same time, it is in the interaction between the material and the social that translation occurs and liminal spaces emerge.

Such translations are fraught with tension and controversy. Novel ideas do not just diffuse effortlessly across networks, but instead are more likely to be met with inertia and even resistance. Following this line of reasoning, the more "disruptive" an invention (Christensen, 1997), the more difficult it is to produce a valuable result (Garud & Munir, 2008). Besides having to overcome resistance and inertia, innovators will have to enrol the support of collaborators to develop a whole new infrastructure for the value of the novel idea to emerge in use.

Translation was evident in the case of the novel substance that Silver stumbled upon. Speaking about the series of translations that unfolded before the novel substance eventually became Post-it Notes, Silver noted, "There are so many hoops that a product idea has to jump through." (Lindhal, 1988). Similarly, translation lies at the heart of Wayne McGregor's approach to improvisation. Dancers translate each other's actions in the context of performance as McGregor sets the pace for the dancers to engage with each other. He is also renowned for the ways in which he translates materials such as computer simulations of bodies in motion as resources to inspire his improvisations.

Research through this lens is driven by the notion of symmetry (Callon, 1986). Symmetry implies that researchers ought to consider not just the social but also the material as exemplified in our two vignettes. Symmetry also requires event neutrality – the same event can hold different implications for different actors depending upon the relational networks that events emerge from. Consequently, symmetry also implies that researchers should avoid attachment to the truth or falsity of any beliefs held by actors, and that success and failure both deserve explanation (Bloor, 1973).

Implications of temporal emergence

The third lens folds relational and temporal experiences together in spacetime such that the relational landscape both forms, and is formed by temporal processes (Ingold, 1993). Actors are not just relational agents operating within contexts; they are constantly engaged in the co-emergence of their selves and their situations. The meaning that Spence Silver and Wayne McGregor make of their activities is based on the spacetime frames they invoke. For instance, it is Silver's ongoing quest to identify value from the glue he stumbled upon that kept him motivated despite his frustration at the indifference and resistance he encountered from his colleagues. In McGregor's case, temporal experiences are manifest in the visible sense of excitement at the moment of co-creation.

Conducting research from the vantage point of Lens 3 is challenging, as it calls for non-representational methods that go beyond discursive considerations to recognize the ephemeral and dynamic becomingness of human experience as a continuous flow of creative action (Lorino, Tricard, & Clot, 2011; Nayak, 2008). Shadowing is one research method that holds promise for inquiries that seek to understand the emergence of meanings in real-time (Czarniawska, 2008; McDonald &

Simpson, 2014; Vásquez, Brummans, & Groleau, 2012). Not only does this method allow researchers direct access to aesthetic and emotional dimensions of human experiences (Hareli & Rafaeli, 2008; Liu & Maitlis, 2013; Simpson & Marshall, 2010), but in addition, it allows them to follow the temporal unfolding of agentic action. Czarniawska's (2004) 'action net' approach also holds potential to more fully engage with the temporal dimensions of experience. She draws attention to the different actions that periodically come together, forming rather than being formed by the temporary connections, or knots, that constitute actors. In this way, she seeks to capture the fluidity and dynamism of organizing in full flight.

In their study of innovation at 3M, Garud, Gehman and Kumaraswamy (2011) show agents linking different temporalities in practice. Their study documents how "temporal complexity" (p.757) enabled the organization to "leverage serendipitous moments – moments that cannot be scheduled by the clock or the calendar – whenever they occurred". The authors write of the importance of "endogenizing time" (p.758) in order to understand how novel ideas can be created and rendered valuable. Similarly, Tsoukas and Hatch (2001) build on Weick's (1979) call for practitioners and scholars to "complicate themselves", noting, "[o]nly that to which we attend can make the journey from expectation to memory, and in this regard, narrative may be an important attention-giving device. If this is the case, then narrative helps us experience time by offering a means of passing expectation into memory. Furthermore, memory and expectation, once engaged, enlarge our consciousness in (and of) the present. Such enlargement increases our complexity" (Tsoukas & Hatch, 2001, p. 1005).

However, any text that emerges (and by which we mean not just written or spoken words, but also objects and artefacts), is open to reconfiguration, thereby further complexifying situations. As Ricoeur (1984) observed, reading reveals an "unwritten aspect of the text", and "it is the prerogative of reading to strive to provide a figure for this unwritten side of the text." According to Eco (1981, p. 45), "[t]he principle feature of a text is precisely its ability to elicit abductions." Going even further, and resonating with the improvisational dynamics of Wayne McGregor's dance studio, Eco suggested that in musical performance "considerable autonomy [is] left to the individual performer in the way he chooses to play the work" (Eco, 1984, p. 47).

Temporal experiences are based not just on the pattern of spoken words, but also on "the unfolding temporal contours of *words in their speaking*" (Shotter & Tsoukas, 2011, p. 339). Exploring how the extraverbal situation shapes the utterances exchanged, and how particular uses of language enable people to make new distinctions and connections, are important ways through which novelty (be it a new perspective or a fresh distinction) emerges. Narratives and stories are an important part of this process, not merely as objects of retrospective analysis, but also "openings to interlocutors' worlds that point – gesture – towards different relational possibilities in real time" (Shotter, 2011; Shotter & Tsoukas, 2011, p. 344). Indeed, narratives are dynamic entities that take on new forms through their telling, enactment, and retelling (Bartel & Garud, 2003). In this conceptualization, the present is perpetually 'in-the-making' through the inter-play of remembered pasts and abductive anticipations of imagined futures (Emirbayer & Mische, 1998; Garud, Kumaraswamy, & Karnoe, 2010; Simpson, 2009, 2014). Neither pasts nor futures can fully determine what unfolds, thereby admitting the possibility of alternative emergent presents.

OVERVIEW OF THE CHAPTERS IN THIS VOLUME

The chapters in this volume span a wide range of philosophical, theoretical, and empirical orientations. The first eight chapters of Part I touch upon many of the issues that we raised in our explication of the three lenses. While individually each chapter offers something new to our understanding of novelty emergence, collectively they generate a mosaic of ideas that open up new avenues for research. The final three chapters in Part II do not address novelty emergence directly, yet contribute to the broader agenda for process organization studies. Below we provide a brief summary of the key arguments of each chapter in the hope that this will entice readers to dig into the richness that this collection offers.

Part I: The Emergence of Novelty

Suzanne Guerlac continues her exploration of Bergson's thinking (Guerlac, 2006) by challenging mechanistic ways of understanding. In addressing the question whether mechanism is left behind when we attend to emergence, she draws on Bergson to explore the radical differences between the living and the artificial, the animate and the inanimate. What is 'life' in a heavily technological world, dominated by artificial entities? Seeking to recover a Bergsonian view of the

living, Guerlac notes the important differences between "abstract" and "concrete" time and their relevance for better understanding living beings. She critiques the functionalist and computational use of "emergence" in contemporary science (especially biology) noting, however, that more recent developments, such as biosemiotics, are promising insofar as they attend to experience. Furthermore, Guerlac notes that the old debates between mechanism and vitalism are far from being outdated, challenging us to think afresh the ethical and political problems that arise.

John Shotter turns his attention to the ways in which we participate in our perpetually indeterminate and fluid worlds. He argues that before we can begin to think about emergence, we must first sensitize ourselves, our bodies, to the fragile and ambiguous meanings of what he calls "relational things". These, he describes as having no visible, spatial form, and yet they can be named and they do exert influence upon us as we move about in our worlds. Relational things sit within the temporal flux of experience, mediating between past and future meanings. The puzzle that Shotter raises then, is how are we to conduct research on these intangible, semiotic "relational things" as both we and they flow along in our everyday lives? His response is to set out a new form of inquiry that obliges us to develop new ways of seeing and experiencing the myriad possibilities that come with being "participant parts" in ever changing situations.

Aris Komporozos-Athanasiou and **Marianna Fotaki** bring the work of the Greek-French philosopher Cornelius Castoriadis, which is very rarely cited in the organization studies literature, to bear on the problem of imagination in the inherently creative processes of organizing. In this, the focus of the authors is very much on the relational and dialogical dimensions of creativity rather than the production of creative outputs per se. They note that the latter perspective dominates the contemporary literature, but at the expense of an adequate theorization of affect, imagination and "social imaginaries" in creativity. Following Castoriadis' notion of a "radical ontology of creation", they propose an alternative approach that accounts for the emergence of new forms in terms of non-representationalist theories and indeterminate, ever-unfolding significations. Here, creativity is understood as an ongoing process that emerges at the intersection between the individual psyche and the social imaginary. More particularly, they show how intrinsic motivations, passions, and unconscious drives may be integrated into a comprehensive theory explaining the production of

creativity in organizations. Their theory of imagination shows organizational creativity to be a process that is both affective and fundamentally political.

Jaan Valsiner, one of the founders of cultural psychology, approaches the emergence of novelty through semiotics, namely the use of signs in irreversible time. Sign use, he notes, guides actions, and actions feed forward to new construction and further use of signs. This dynamic feed-forward loop involves the building and demolishing of sign hierarchies that control both continuity and innovation. From a semiotic dynamics perspective, using several examples, Valsiner urges organizational researchers to focus on the architecture of sign assemblies that are used to regulate the organizing processes. The regulation of organizational dynamics includes the erection of hierarchies of signs that can demolish themselves when necessary. The functioning of sign hierarchies, argues Valsiner, is on the border of the past and the future. The sign hierarchies construct the relationship with the future, while re-constructing some of the past. Novelty emerges through a process of sign rearrangement in meaning construction.

Trevor Pinch explores the processes underlying the emergence of the Moog's electronic music synthesizer, a major musical innovation of the 20th century. His study offers three important insights that add to an understanding of novelty. First, he illustrates how the act of creation is distributed across a number of actors, devices and tools. Second, he establishes how creative acts involve not only producing new artefacts, but also new ways of socially and materially organizing production, distribution and consumption. This observation resonates well with the notion of translation that we introduced in Lens 2, and with the social construction of technological systems (SCOT), a research tradition to which Pinch has contributed and from which his current chapter draws. Third, he shows how creative acts emerge in liminal spaces. These are spaces in-between social worlds, with each social world itself an agglomeration of practices and ways of knowing and doing. What is of interest here is that such liminal spaces emerge during play, an under-theorized area of work in organizational studies. Pinch sets the stage for us to go deeper into these issues by focusing on the spaces where play is more likely to unfold. Ultimately, by taking a distributed ontology, and by considering the multiplicity of translations that have to take place in and through play for creative acts

to become valuable, he is able to show how emergence of 'useful novelty' is such a remarkable accomplishment.

Deborah Dougherty acknowledges the importance of emergence in the context of drug discovery, and asks how firms might take advantage of emergence. Her response is to focus on abductive learning routines. These are routines in organizations that help surface configurations of interactions, anticipate emergent perturbations, and reframe interacting elements new performance objectives. She then applies these three abductive learning routines within projects, processes, strategic initiatives and ecological sub-systems that together form an overall innovation system. In turn, each sub-system adapts as other subsystems emerge. In sum, Dougherty's work shows how there are multiple emergent entities informing one another, and at the same time nested within a larger system.

Keith Sawyer draws on his extensive experience of improvisational theatre to explore the dynamics of emergence in the context of organizational innovation. In his view, innovation is always the product of improvisational encounters in groups, networks, and organizations, but focussing on these encounters alone is not sufficient to account for the emergence of collective group properties. Basing his argument on a combination of complex systems theory and symbolic interactionism, Sawyer proposes a hybrid model that he calls "collaborative emergence". Here, even though an improvising system may have only a small number of active agents (performers), emergence is nevertheless possible because these actors are themselves complex entities, and they interact with each other by means of a highly complex symbolic language. Their conversational encounters are characterised in terms of "denotational" and "metapragmatic" levels of meaning, where the latter provides a vehicle for actors to negotiate their intersubjectivities. Sawyer demonstrates that where metapragmatics remain implicit in conversation, collaborative emergence is more likely to occur.

Isabelle Bouty and Marie-Léandre Gomez approach emergence by taking a refreshingly empirical view of creativity as it arises in organizational processes. They seek to go beyond existing literatures, which tend to cast creativity in terms of new and useful ideas, by taking an explicitly processual orientation to understanding how creative work actually comes about in organizations. Specifically, they examine the flow of activities and events, and the material, spatial and temporal

entanglements that contribute to the creativity of Michelin-starred restaurants, for which gastronomic inventiveness is a hallmark. Through their careful analysis of the practices of three elite chefs, Bouty & Gomez find that, at least in the context of haute cuisine kitchens, creativity may be understood as a multi-strand process in which "working on ideas", "creative teamworking", and the "naming" of new dishes are continuously woven together within personal, social, and institutional dynamics of influence. They conclude that creativity work is both highly organized in terms of who, when and where, and highly improvisational.

Part II: Process Studies

     Chris Mowles introduces readers to the thinking of Norbert Elias, arguing that he deserves greater recognition in the canon of process-oriented scholarship, and that his ideas have important implications for process organization studies. At the heart of Elias' work is a focus on human interdependence and its ever-fluctuating ramifications in particular types of situations (or "figurations") that cumulate and stratify over the course of history into emergent patterns that recursively enable and constrain further ongoing interactions. Mowles draws attention to the centrality of paradox to Elias' thinking, showing how tensions between continuity and change, inclusion and exclusion, co-operation and competition, involvement and detachment are produced and sustained over time. Mowles shows how Elias offers a perspective that reaches beyond both weak and strong versions of process thinking, Moreover, in line with the theme of this volume, Elias' thinking on emergence is shown to be a precursor and inspiration for later theoretical developments including those on complexity theory discussed earlier in this chapter.

     Dvora Yanow, drawing on "thick" ethnographic accounts, provides an overview of the learning processes involved in achieving mastery, namely in turning novice-ry to mastery. Addressing the question of how practices are learned, Yanow distinguishes seven characteristics of the practice-learning processes, highlighting among other things, the role of tools, the body, and tacit knowledge. At the same time, she draws attention to pre-novice learning, a topic that has been relatively unexplored in the practice-learning literature. Furthermore, Yanow explores the learning that goes on after mastery has being achieved, another rarely explored issue. Post-mastery learning, she notes, is achieved when masters, confronted with particular problems, are prepared to reclaim focal awareness.

The paradox Yanow discusses is that, while for a novice to become a master, the knowledge involved needs to pushed into subsidiary awareness (otherwise skilled performance cannot be competently carried out), for a master to carry on learning, the subsidiary awareness needs to become focal when the circumstances demand. She ends with a plea for comparative studies to explore the learning that takes place across the life cycles of practising and practitioners. Moreover, her overview of the learning processes involved on the way to, and after, mastery suggests new directions for research by exploring pre-novice and post-master learning, focusing in particular on the body, the use of tools and artifacts, and emotions.

Jorgen Sandberg, Bernadette Loacker and **Mats Alvesson** explore the different uses of "process" in process organizational research. They do so by taking as a case study organizational identity research and reviewing relevant papers in eight leading journals. Unhappy with the hitherto suggested distinction between "weak" and "strong" process, the authors develop a typology of how process has been viewed in identity research, suggesting that there are five different conceptions of process, ranging from process as a state transition to process as a flux. Their paper explores several constitutive features of process, namely ontology, time, space, and agency. Their typology offers a more nuanced understanding of process, thus helping scholars better understand what view of process they subscribe to, as well as sharpening our understanding of the differences between the different conceptions of process. Operating at the meta-level (namely in discussing the different views of process), the paper's relevance is far broader than identity research, inviting organizational scholars at large to reflect more systematically on conceptions of process.

CONCLUSION

So, after all this, how does novelty really emerge? As we have argued in this introduction, and as the chapters collected together here demonstrate, there are many ways of answering this question. But there are also thematic threads that draw these manifold perspectives together, providing the basis for a more critical and reflexive engagement with the important topic of novelty emergence. Each of the three lenses that we have proposed draws on a unique set of philosophical assumptions about space (spatiality) and time (temporality), each invites its own form of theorization, and each offers a different vantage point for acting (and researching) in an unfinished and

indeterminate world. Emergence can no longer be dismissed as a residual category that has to resort to mystical forces as a means of explanation. In contemporary scholarship, it is accepted as part and parcel of our daily lives, especially as they become more interconnected and fast paced. In such a world, it is imperative to grapple with the notion of emergence all the way from its philosophical underpinnings to its practical consequences. This book challenges readers to examine their own assumptions and views on process, and in particular, how they understand space and time. In doing so, we hope that our fellow travellers in process organization studies will find an abundance of ideas in the chapters in this book to resource and complexify their own further explorations of emergence.

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