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Sub-theme 34: Organized Creativity: Harnessing Serendipity and Surprise

DISENTANGLING DYNAMICS OF THE INNOVATION JOURNEY: A BECOMING PERSPECTIVE

INTRODUCTION

The ability to translate creative ideas into innovations that sustain organizational growth is vital for the success and survival of firms (Anderson, et al., 2014; Slater, et al., 2014; Keupp, et al., 2012; Crossan & Apaydin, 2010). Whilst innovation, which we define as ""“invention, development, and implementation of new ideas” (Garud, et al., 2013, p. 776) by people within an organisational context, are beneficial for both organizations and societies at large, undertaking concrete effort to transform a creative idea into an innovation in reality is perhaps the most vexing problem facing managers (Van de Ven , 2017; Garud, et al., 2017). Yet, since innovation research has largely focussed on innovation as an output rather than on the process of innovating itself, the dynamics of the messy, non-linear, organizational processes through which innovations are managed *in* practice, remains under-theorised and hence poorly understood (Fortwengel, et al., 2017; Van de Ven , 2017; Garud, et al., 2013). How do firms organize whilst innovating?

Our paper addresses this question by developing and deploying a novel ‘processual’ becoming perspective (Tsoukas & Chia, 2002; Langley, et al., 2013) that allow theorists to pry open the proverbial black box that conceal the organizing and innovating processes as they unfold within organizations. Our real time, ethnographic, field study of two new product development projects as they unfolded within an organization helps illuminate how organising and innovating entwine as they become. We unearth three distinct organizational dynamics which we've called the dynamics of preferential equivocality, the dynamics of temporal scaffolding and the dynamics of relational coherence that constitute innovating-*in*-practice. Our findings also reveal that these three dynamics are regulated by a mechanism, called ‘tensegrity’ (tensional-integrity). We expand and elaborate on this tensegrity mechanism, which was seen

to influence the entwinement and unfolding of organising while innovating. By identifying the dynamic processes and explicating the mechanism through which organising while innovating becomes, our study offers theoretical and practical guidance for managing innovating-*in*-practice. Overall, since our theoretical and empirical contributions illuminate the unfolding dynamics of the innovation journey, this aligns well with the theme of "Surprise in and around Organizations: Journeys to the Unexpected" of the 34th EGOS Colloquium. Further, by identifying and elaborating these dynamics and the corresponding coordinating mechanism that regulate *innovating-in-practice*, our paper complements "Sub-theme 34: Organized Creativity: Harnessing Serendipity and Surprise" by demonstrating *how* serendipity and surprise are harnessed while innovating within organizations.

THEORETICAL BACKGROUND

Despite several decades of research on innovation and how it might be sustained, the resulting insights have failed to yield a comprehensive framework to guide innovation research or management practice (Tidd, 2001, p. 173; Ahuja, et al., 2008; Crossan & Apaydin, 2010; Keupp, et al., 2012; Kahn, et al., 2012; Perks & Roberts, 2013). There are at least four major reasons why this limited insight persists. First, a widespread impediment to systematic innovation research has been the rather imprecise and liberal application of the term *innovation*, 'often employed as a substitute for creativity, knowledge, or change' (Crossan & Apaydin, 2010, p. 1155). The literature on creativity is perhaps better equipped to explain the mysteries shrouding ideation (Cohendet & Simon, 2015; Amabile, 1995; Harvey, 2014; Harvey & Kou, 2013). Knowledge is "a resource that is utilized in the process of creating innovations" (West & Bogers, 2014, p. 826). It could also be an outcome of the innovation process (Nonaka & von Krogh, 2009). Innovating does involve change but not all change processes lead to innovation. The result of this broad interpretation of 'innovation' has been a fragmentation of theoretical insights which prevents us from developing a deeper understanding of how to organise while innovating.

Second, much of the voluminous research on innovation to date has focussed on innovation as an output (Ahuja, et al., 2008; Crossan & Apaydin, 2010; Garud, et al., 2013; Garud, et al., 2017). Utilising proxy indicators like R&D expenditure, number of patents or surveys of new product announcements (Tidd, 2001, pp. 169-170; Adams, et al., 2006), the 'innovation as output' scholars have addressed questions about what produced an innovation. The

inconclusiveness of such 'organisational innovativeness' research notwithstanding, as Van de Ven and Huber (1990) bluntly observe,

> "To say that R&D investment causes organizational innovativeness is to make important assumptions about the order and sequence in which R&D investment and innovation events unfold in an organization. Thus, one way to significantly improve the robustness of answers is to explicitly examine the process theory that is assumed to explain why an independent (input) variable causes a dependent (output) variable. To do so requires opening the proverbial "black box" between inputs and outcomes, and to take process seriously by examining temporal sequence of events" (p. 214).

Put differently, such research assumes rather than demonstrates a process theory and largely overlook the encompassing problems they confront while managing innovations (Van de Ven, 1986, p. 590).

Third, the innovation journey is 'a nonlinear cycle of divergent and convergent activities that may repeat over time and at different organisational levels' (Van de Ven, et al., 1999, p. 16). Yet it is often represented as a simple, linear, cumulative sequence of stages or phases (Wolfe, 1994; Kahn, et al., 2012). Such static representations of innovation mask what is inherently a complex process with multiple feedback and feed forward loops. Thus the linear stage model has proved a deceptive distraction to further scholarly inquiry into the innovation process (Wolfe, 1994, p. 411) because several complexities which managers encounter while innovating may transcend the various stages or spill across multiple levels of analysis (Gupta, et al., 2007).

Finally, research on the innovation process, which focusses on how innovating within organisations is fostered, emerges, grows, develops or aborts over time (Langley, et al., 2013; Garud, et al., 2017) and might be sustained in constructive directions, remains both underexplored and underdeveloped (Crossan & Apaydin, 2010, p. 1167; Keupp, et al., 2012). So how exactly do we organise while innovating? Anticipating this question, several innovation scholars have identified both a need for a more integrated theory on the role of organising while innovating (Tidd, 2001, p. 173; Ahuja, et al., 2008; Crossan & Apaydin, 2010; Keupp, et al., 2012) as well as a richer conceptual understanding of the innovation process (Garud, et al., 2017; Garud, et al., 2013).

RESEARCH GAP ADDRESSED

How do firms organize whilst innovating? The difficulty answering this question, it seems to us, is that we cannot restore the dynamics to our conception of innovation as process, alongside

organising and innovating, without changing the whole way we think about 'process' and our relations with it. Developing a richer conceptual understanding of the innovation process requires understanding the distinction between the 'organisational being' and 'organisational becoming' perspectives on 'process' within organisational theory (Tsoukas & Chia, 2002; Langley, et al., 2013; Garud & Turunen, 2017). Process in the former represents 'change in things'. As in Entity X undergoes a process of change from State A to State B. Process is therefore epiphenomenal or something that goes on between things, states or entities. An 'organisational becoming' perspective on the other hand insists on seeing process as constituting the essential aspect of every 'thing' that exists (Rescher, 1996; Whitehead, 1929/1978; Bergson, 1998/1911; James, 1909/2011). For example, a stone is nothing but an instant within the 'process' of erosion. The world, in other words, is seen as an "unbroken and undivided movement" (Bohm, 1996, p. xxix) where all "things" are to be understood as emerging from and dissolving into processes.

So if primacy is bestowed to 'process', we would require a different set of conceptual tools to grasp the dynamics of organising while innovating. One, we must eschew thinking about firms and the environment as 'bounded entities' and regard 'firm + environment' as an unbounded open ended processes represented by lines (Ingold, 2007). So 'lines' are to 'process' what 'blobs' are to entities. Two, firms are no longer 'entitative nodes' within a networked environment but rather are 'knots' constituted by entangled processes (Ingold, 2015, p. 15). Finally, we need to replace the notion of 'interaction' which implies external contact between closed 'entities' with the notion of 'correspondence' (Ingold, 2013, p. 105), the means through which processes influence one another. While interaction reads process *across* contexts, correspondence reads '*process-with-contexts*' *alongly*, in movement, flow and transformation. Lines, knots and correspondence now allows us investigate the dynamics of organising while innovating. Organising and innovating are reconceptualised as 'processes' represented by lines or better still, a bundle of lines. In other words, we must now understand how does organising and innovating entwine as they become?

METHODOLOGY

In order investigate the dynamics of *innovating-in-practice*, we draw on a 13 month long, real time, ethnographic field study of two new product development projects (Alpha and Theta) at Peak Scientific Limited (henceforth referred to as Peak). Peak Scientific are global leaders in

the manufacture of 'gas' generators for scientific applications. Tracking two new product development projects in real time within the same organisation allows for a genuinely open-ended and comparative yet critical understanding of organising while innovating. The endeavour, though essentially comparative, does not compare bounded objects, structures, people, entities or outcomes but rather *the ways of becoming*. And finally, the permission to access all internal documents, emails (The first author was given an internal Peak email id) and audio record all the meetings (84 meetings ranging between 30 mins and 3 hrs), discussion and conversations (64 recoded ranging from 15 mins to 90 mins) simplified the execution of the research. All of the information was chronologically ordered, the emerging dynamics coded and their unfolding pattern analysed.

FINDINGS

The gathering and analysing of data revealed three fundamentally significant process complexes. The first process complex is what we call the 'Dynamics of Preferential Equivocality'. This refers to the gradual emergence and revealing over time of the various preferences that shape innovating. Put simply, preferences rather than being completely specified in advance, prior to the execution of the innovation were in fact emergent and revealed as the innovation journey unfolded. This process complex was in turn constituted and shaped by four heterogeneous process threads that we've called product function preference, target cost preference, design preference and technology preference.

The second process complex illuminates the temporal dynamics of the innovation journey. Temporality therefore refers to the experience of time and to the shaping of organisational spatiality with the passing of time (Hernes, 2014). The 'Dynamics of temporal scaffolding' refers to the ongoing enacting and maintaining of temporal boundaries by regulating development priorities and the activity sequence while innovating. Innovation managers shape the experience of time by regulating three heterogeneous processes: Temporal boundaries which refers to barriers set in time (deadlines, launch dates), temporal prioritising which refers to the progressive ordering of attention accorded to tasks while innovating and temporal sequencing, which refers to the ordering of innovating activities unfolding over time.

Co-ordination is central if organisations have to successfully innovate. This relational challenge has previously been framed as "the structural problem of managing part-whole relationships" (Van De Ven, 1986, p. 591) while innovating. This seems to suggest that

organisations are entities or substrates awaiting the imprint of translatory activities (Garud, et al., 2017) that may be conducted upon it. However, our research suggests that organisations are no longer substrates awaiting imprinting activities but are themselves a congelation of past activities. Put differently, organisations are also known as firms because they result from a 'firming' up of organising processes.

Thus the third process complex, the ‘Dynamics of relational coherence’, refers to changing patterns of dependencies between various organising processes as innovating unfolds. Three heterogeneous processes were seen to constitute and shape the dynamics of relational coherence. There were; the process of regulatory coherence refers to the ongoing alignment between the organising and innovating processes to conform to the regulatory process. The process of procedural coherence refers to the ongoing alignment between the defined organising procedures or ‘routines’ and the emerging innovating process. Finally, the process of cross functional coherence refers to the evolving informational and task dependencies between the various functional units while innovating.

To summarise, the analysis revealed three distinct yet entangled processes complexes that correspond to shape the dynamics of organising while innovating. These are the dynamics of preferential equivocality, temporal scaffolding and relational coherence. Organising while innovating involves mindfully steering these three dynamic process complexes. Hence a puzzle, if ‘everything’ is in ‘movement’, ‘flux’ and ‘flow’, then how is organizational stability being maintained?

Solving this puzzle required an analyses of project breakdowns. Breakdowns refer to discrepancies between the expectations and actual experience of organisational actors that temporarily disrupt organising while innovating. Since breakdowns refer to events where things did not go according to plan, these help to unravel the entwined nature of the innovating and organising processes. This is because a breakdown could be interpreted as a disruption of the mechanism which keeps organising and innovating entwined. Investigating episodes of breakdowns from the two projects revealed tensegrity as the stabilising mechanism.

Tensegrity is a portmanteau word combining tension and integrity (Volokh, 2011). It was originally coined by the architect Richard Buckminister Fuller after whom the carbon C60 molecule has been called buckministerfullerines or buckyballs. It refers to an architectural principle whereby stability is engineered through the distribution and balancing of

counteracting forces of tension and compression along their component lines. However, tensegrity is not merely an architectural principle but also plays an important role in life. As the Harvard based cell biologist Donald Ingber (1998) notes, "Only tensegrity, for example, can explain how every time that you move your arm, your skin stretches, without any breakage or discontinuity" (p. 56). 'Movement' in other words is central to the tensegrity principle. The stability it generates is akin to that experienced by a tight rope walker or a bicyclist. Breakdowns in the innovation journeys occurred when correspondence between the three process complexes, was disrupted. Continuing the innovation journey then required organising processes to restore correspondence between the three process complexes. Tensegrity thus regulates organising while innovating.

CONCLUSION

Aligned to the sub-theme, our research has uncovered the emergent structures along with the constitutive processes by which organizations harness serendipity and surprises in their efforts to be creative and innovative (Cohendet & Simon, 2015; Fortwengel, et al., 2017). Organising and innovating processes constitute three heterogeneous complexes called Dynamics of Preferential Equivocality, Dynamics of Temporal Scaffolding and Dynamics of Relational Coherence which are distinct yet entwined. Organising attempts to stabilise various innovating process dynamics by binding them in knots. Innovating on the other hand triggers organising. Stability while innovating is thus regulated by the tensegrity principle that attempts to configure organising and innovating processes in a countervailing manner. The tensegrity model of organising while innovating, thus, provides us with a clearer understanding of how innovations are forged into existence within the crucible of organising processes.

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