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Insights into the creation of a successful MNE innovation cluster

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Abstract

Purpose – This paper aims to recount the genesis of a successful innovation cluster among Irish-based divisions of multinational enterprises (MNEs) and Irish universities in the pharmaceutical industry. This cluster was actively "narrativized" through the language of obligation, desire, competence and know-how. As such, it is typical of the "hero's quest" literary genre in which challenges are faced, obstacles are overcome and victory is ultimately won. Importantly, in this story, the cluster was morally and pragmatically charged with dealing with significant challenges faced by the Irish pharmaceutical industry. Broader societal discourses operated as a resource for actors to use in proposing collaboration and innovation as the appropriate response to such challenges. Specifically, through narrative and discourse, actors created the necessary conditions conducive for a cluster to develop. These created a discursively constituted shared purpose which ultimately ensured successful innovation collaboration. Essentially, through narrative and discourse, the key actors identified the collaboration a protagonist in pursuit of a quest. By linking theoretical and empirical insights, the paper offers a conceptual framework that can be used in future studies to understand the emergence of clusters.

Design/methodology/approach – Adopting Wengraf's (2001) structured approach to narrative interviewing, 18 key actors shared their understanding of how the cluster came into being. Each interview began with a single question intended to induce narrative, in this case "tell me the story of the cluster as you see it." This allowed participants to be in control of their own story (Wengraf, 2001). Each interview was transcribed in full and appended to notes taken at the time of the interview. Each narrative offered a "purposeful account" (Jovchelovitch and Bauer, 2000) of how and why the cluster was formed and the centrality of the participants' roles. In line with recognised protocols, in the authors analysis of data, they paid specific attention to how stories were told, the roles assigned to key protagonists, as well as how events and actors were linked in stories (see Czarniawska, 1997).

Findings – This paper further demonstrates how language, metaphor and narrative and discourse (Hatch, 1997) becomes a strategic resource on which actors can draw to create desired realities (Hardy *et al.*, 2000) particularly in terms of collaboration and innovation. Further, this case highlights how dialogue was encouraged throughout the process of establishing the cluster and has continued to be an important element. Rather than imposing some grand design, the SSPC cluster is and always will be emergent. In this sense, in the early stages of collaboration, detecting and supporting existing and emergent communities is essential to success, and shared identity which is the outcome of members' discursive practices appears to be a powerful driver of collaboration.

Research limitations/implications – There are important insights for cluster and innovation theory development that can be extrapolated from this study. First, context-specific narrative accounts provided in this study further extend the authors' understanding of the process through which

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fundamental changes (innovation) in organisational activities are enacted (Ettlie and Subramaniam, 2004). Second, the authors' understanding of how new ventures are attributed organisational legitimacy through language and story is augmented (Gollant and Sillince, 2007; Pentland, 1999). Third, the authors have articulated how different discourses are mobilised by actors at different stages of development and for different audiences to create desired innovation outcomes, illustrating that innovations can result from advances in knowledge (McAdam *et al.*, 1998). Finally, the authors see how discourse and practice are dynamic as participants articulate their intention to exert further influence on innovation discourse through their lobbying activities.

Practical implications – By focusing on the specific problem of crystallisation, and using the discourse of collaboration, particularised ties emerged around SSPC and this inspired synergistic action. When seeking approval from host organisations, they spoke in terms of return on investment and the potential to add value, part of the discourse of organisational effectiveness. Consequently, the authors stress the benefits of understanding audiences and adjusting discursive approaches on this basis. As such, this study provides evidence that tailored discursive approaches can be used as a resource for managers and practitioners that are seeking to inspire innovation through collaboration.

Social implications – The discourse of collaboration also became a resource upon which actors could draw to articulate how they might respond to the context and realise the vision. Because this discourse is promoted in government reports and embodied in government strategy, the protagonists were able to borrow from the discourse to secure the necessary resources (in this case funding) that would enhance the possibilities of more effective collaboration. This is because different stakeholders engage with discourse in ways that help to create the outcomes they desire. It was noticeable that the leaders within the Solid State Pharmaceutical Cluster recognised the importance of discourse to innovation collaboration, and on this basis, they successfully adjusted the use of terminology in relation to the exchange partners they were addressing. When addressing potential partners within industry and academia, they utilised both the "burning platform" and "Ireland Inc." metaphors to create generalised membership ties around the need for innovation and action.

Originality/value – First, context-specific narrative accounts provided in this study further extend the authors' understanding of the process through which fundamental changes (innovation) in organisational activities are enacted (Ettlie and Subramaniam, 2004). Second, the authors have articulated how different discourses are mobilised by actors at different stages of development and for different audiences to create desired innovation outcomes, illustrating that innovations can result from advances in knowledge (McAdam *et al.*, 1998). Finally, the authors see how discourse and practice are dynamic as participants articulate their intention to exert further influence on innovation discourse through their lobbying activities.

Keywords MNEs, Desire, Innovation, Collaboration, Narrative, Cluster, Competence, Obligation, Know-how

Paper type Research paper

Introduction

This paper delineates the sequence of events and activities that led to the creation of a successful innovation cluster-involving multinational enterprises (MNEs) in the Irish pharmaceutical industry together with a number of universities. This context is particularly noteworthy because the pharmaceutical industry is highly regulated and insular: MNEs closely guard intellectual property (IP) and have historically been slow to collaborate (Henderson *et al.*, 1999). To sustain performance, however, MNEs may need to adapt their strategies (Zhao *et al.*, 2014) and, thus, in response to changing environmental conditions, we see a discernible shift from competition to collaboration within the Irish pharmaceutical industry over the past decade (O'Malley *et al.*, 2015). This transition occurred over a relatively short period of time through the creation of a cooperative innovation cluster which provides individual and collective benefits. This

has produced significant advances in knowledge (McAdam *et al.*, 1998) and generated fundamental changes in the activities of participating organisations. Innovation clusters are acknowledged as important for economic development in many countries with many governments attempting to encourage innovation clusters through industrial policy (Liyanage, 1995; Arthurs *et al.*, 2009; O'Malley *et al.*, 2015). Government support may be a necessary but insufficient condition, as the pre-existence of social capital (Fillieri *et al.*, 2014) is also recognised as an essential component.

Innovation clusters

Literature suggests two broad mutually reinforcing groupings of cluster typologies, economic and industrial (Majocchi and Presutti, 2009), with three primary industrial cluster types based on transaction costs: pure agglomeration, industrial complex and social network (Ferreira *et al.*, 2012; McCann *et al.*, 2002). They can also be regarded, more fundamentally, as social communities which specialise in the creation and transfer of knowledge (Morosini, 2004).

Innovation requires "a search for diverse sources of knowledge, both existing and new, in a manner unfamiliar to those at the centre of this endeavour" (Kelley *et al.*, 2009, p. 222). Innovation, knowledge and capabilities have been central themes in strategy and performance research (Knight and Cavusgil, 2004) and although some large organisations may be capable of innovation-based corporate entrepreneurship (Kelley *et al.*, 2009), the majority of innovating firms are unlikely to possess all of the necessary capital, knowledge, expertise and technologies internally (Story *et al.*, 2011) and are unlikely to enter learning relationships (Dyer and Hatch, 2006; Spencer, 2008). Therefore, clusters have emerged as central in facilitating efficient and effective innovation processes (Powell *et al.*, 1996). Clusters (Birkinshaw and Hood, 2000; Boschma and Frenken, 2006; Boschma and Martin, 2010) or industrial districts (Inkpen and Tzang, 2005) are networks of independent firms that share the same geographic location and market segment and that collaborate for various strategic and operational reasons, including innovation. Such clusters can represent worldwide centres of excellence within particular industries (Mudambi and Swift, 2012).

Localised clusters have sprung up around the world including Silicon Valley, Ireland and Taiwan (Bresnahan *et al.*, 2001) and Portugal (Ferreira *et al.*, 2012), and can include R&D organisations, universities and research laboratories (Lee *et al.*, 2001). Central to the development of regional clusters is the belief that geographical proximity and cultural sensitivity/distance result in more effective knowledge transfer than that experienced between MNEs and their overseas subsidiaries (Birkinshaw and Hood, 1998; Shenkar, 2001). This global transfer and local implementation of knowledge is critical for MNEs (Schleimer and Pedersen, 2014) and is aided by the heterogeneity of organisations within clusters (Ter Wal and Boschma, 2011) and their boundary spanning multinationality (Regner and Edman, 2014). Moreover, "alignment of the MNC subsidiary with its host-country environment aids business growth" in a foreign market (Hada *et al.*, 2013, p. 790).

Industrial clusters have been acknowledged to offer a number of benefits including improved competitiveness through increases in both interorganisation and industrial productivity, as well as by developing "innovation capability and urging new enterprise formation" (Lin *et al.*, 2006, p. 477). When successful, such collaborations provide access to complementary assets and encourage transfer of codified and tacit knowledge (Faems *et al.*, 2005), thereby allowing participating firms to create and mobilise resources that otherwise

might not be possible (Das and Teng, 2000). Because localised clusters are regarded as an important antecedent to innovation capabilities (Gordon and McCann, 2000), they have been encouraged and supported in many countries by policymakers. However, co-location does not automatically or necessarily ensure interaction (Lorenzen and Mudambi, 2013).

Effective collaborative regional clusters create structural shifts from independent firms typified by arm's length relationships to collaborative relationships. However, while there is increased understanding of the benefits that can accrue to innovation networks, the processes by which these collaborative clusters are orchestrated are also deserving of attention. "Collaboration involves individual participants working in collaborative teams while representing the interests of organisational stakeholders" (Hardy *et al.*, 2005, p. 59). This is particularly challenging when the collaboration is between traditionally competitive participants (as in the pharmaceutical industry) or between participants who perceive each others ways of working to be very different (e.g. academic/industry partnership). Thus, although "collaboration has the potential to produce powerful results, not all collaborations realize this potential" (Hardy *et al.*, 2005, p. 58). However, MNE's success is dependent on two critical factors, localisation and maximisation of knowledge (tangible and intangible) and transferring competencies across borders (Mudambi and Swift, 2011; Dunning, 1998). As such, it is insightful to explore a successful collaboration in the form of a cluster and evaluate why and how it works (Contractor *et al.*, 2010).

This paper is structured as follows. First, we present our understanding of the necessary building blocks for inter-organisational innovation collaboration. Second, we describe the narrative methodology employed in this study. Third, we characterise the Irish pharmaceutical industry as the context in which this collaboration took place, and tell the story of the Solid State Pharmaceutical Cluster's (SSPC) formation and achievements to date. While other research has examined how clusters evolve in terms of exploration, exploitation and the balance of both (Zettinig and Vincze, 2012), we explain how the SSPC was formed purely for exploration purposes. Fourth, we discuss our findings in terms of how the SSPC was actively "narrativized" with reference to broader discourses, and detail how it was embodied through the routines, practices and artefacts that ultimately combined to create a successful innovation collaboration. Finally, we extrapolate insights from these findings and provide recommendations for managers and for further research.

Inter-organisational collaboration

Collaboration is considered to be "effective" when it leverages the differences among participants to produce innovative, synergistic solutions and balances divergent stakeholder needs. However, many collaborations never realise their potential (Faems *et al.*, 2005), they fail to balance stakeholder concerns, and many fail to generate any collective action at all (Lawrence *et al.*, 2002). This is often because inter-firm collaborations rely neither on hierarchical nor market mechanisms of control (Hardy *et al.*, 2005). As a result, effective collaboration in a cluster relies extensively on the relationships among participating actors; "MNEs create linkages when they are directly involved in relationships with other firms in the host economy" (Giroud and Scott-Kennel, 2009, p. 555), increasing MNE involvement in individual foreign countries (Johanson and Vahlne, 1997). These relationships "are negotiated on an ongoing basis throughout the life of the collaboration" (Hardy *et al.*, 2005, p. 59). Successful negotiation results in the creation of legitimacy through which the collaboration "is inserted within a broad frame of cultural understanding as an autonomous actor with a distinctive

programme of action" (Golant and Sillince, 2007, p. 1,154) Legitimacy is necessary for long-term survival because it enhances an organisation's ability to access the resources provided by investors, suppliers, employees, etc. (Zucker, 1991). These stakeholders will be unwilling to risk investing their resources in an organisation that they do not view as legitimate. Legitimacy results from the adoption of organised, established procedures or standardised interaction sequences (i.e. institutions) (Jepperson, 1991) that provide stability and meaning to social behaviour (Scott, 1995). Legitimacy is ultimately achieved through the adoption of common reference frames, conformity to values and norms and adherence to laws. Yet, understanding the processes through which organisations (including clusters) become legitimate is challenging (Golant and Sillince, 2007). These authors suggest discourse analysis in general, and narrative analysis in particular, as a method capable of accessing how such challenges are addressed.

Methodology

There has been a long history of qualitative research approaches to capture the processes through which clusters emerge and develop (Easton, 2010). Because narrative and process research conceptualisations both capture events within a particular context and temporal structure, narrative methodologies are particularly well suited to explaining cluster evolution (Pentland, 1999; Makkonen *et al.*, 2012; Zettinig and Vincze, 2012). Narratives are not necessarily grounded in fact and therefore do not purport to be factual descriptions. Rather, they are a representation of experiences encoded with both symbolism and meaning (McAdams and Ochberg, 1988) and within MNEs can facilitate sharing of intangible assets (Berger and Luckmann, 1967). Consequently, the creation of a story is, in and of itself, a symbolic process. It captures useful information through the attribution of sequence, identification of focal actors, recognition of narrative voice and through the implicit use of an evaluative frame of reference and the provision of essential content and context (Pentland, 1999). "Managers and other stakeholders strategically weave narratives incorporating conflicting stories, to meet concerns within and across international markets." (Haley and Boje, 2014, p. 1,116).

To capture how collaboration within the cluster emerged, we sought the individuals who initiated and developed the SSPC because it was "their perception, interpretation and actions" (Makkonen *et al.*, 2012, p. 291) that created [and that continues to reproduce] this cluster. Informants were drawn from the five universities and nine MNEs involved in the initiation of the innovation collaboration[1]. In total, 11 participants involved in the formation and early stages of the cluster were interviewed. Interviews were conducted over a three-month period and lasted between 50 and 90 minutes. Please refer to Table I for a list of participants.

Participant	Organisation	Participant	Organisation
Philip	University 1	William	Pharmaceutical Company 1
Donald	University 1	Peter	Pharmaceutical Company 2
Tom	University 1	Geoff	Pharmaceutical Company 3
Mary	University 2	Paul	Pharmaceutical Company 4
Kevin	University 3		
James	University 4		
Joseph	University 5		

Table I. Participant information

The biographic narrative interview methodology (BNIM) (Wengraf, 2001) was used to elicit data from participants. Each interview began with a single question intended to induce narrative (SQUIN), in our case, "tell me the story of the cluster as you see it.", followed by the introduction of topic questions aimed at inducing narrative. The third phase of the interview allowed us to ask questions based on our preliminary analysis of the first two phases as well as theoretical and practical questions arising regarding the SQUIN-BNIM narrative interview approach.

Each narrative offered a "purposeful account" (Jovchelovitch and Bauer, 2000) of how and why the cluster was formed and participants' roles. In line with recognised protocols, in our analysis of data, we paid specific attention to how stories were told, the roles assigned to key protagonists, as well as how events and actors were linked in stories (see Czarniawska, 1997). We as authors subsequently engaged in interpreting and analysing multiple informants' stories, through supplementing and interrogating interview accounts with a review of published reports, SSPC materials and websites[2] and through engagement with academic texts. Thus, informed by these competing theoretical frames, we revisited our interview transcripts and re-coded based on concepts from these literatures.

Different informants described the key events, the central protagonists in their recollections of how things had happened. Through analysis and interpretation of interview transcripts, we began to get a sense that language and metaphor were important in understanding how this innovation cluster emerged. We began to appreciate that new ventures (such as this one) are brought into being through modal constructions that provide meaning in terms of obligation, desire, competence and know-how (Golant and Sillince, 2007 following Greimas, 1987). In this way, the cluster "emerges as an independent social actor, i.e. it is actively 'narrativized', through the plausible attribution of collective action with this set of modalities, or attitudes" (Golant and Sillince, 2007, p. 1,152). When all four modalities are present in narrative, the organisation emerges as a protagonist in pursuit of a quest (Cooren, 2001). Thus, across all these texts, we searched for indicators of the modal constructions that Golant and Sillince (2007) emphasised, and Downing (2005) attributed to a protagonist in pursuit of a quest:

- *obligation* (organisations are ascribed a moral imperative);
- *desire* (managers emphasise enduring organisational engagement with a distinctive set of values or objectives);
- *competence* (managers highlight organisational activity that demonstrates a clear correspondence with the underlying beliefs, values or interests of stakeholders or signal isomorphism with prevailing industry practices); and
- *know-how* (pointing to the knowledge processes that support superior organisational performance).

Informants construct and communicate their experiences through the stories they tell (Bruner, 1991), and these stories provide legitimacy and accountability for their actions (Czarniawska, 1997). Thus, by adopting narrative interviews, we accessed "the same kind of data that organisational members use to plan, enact, interpret, and evaluate their own actions and those of others" (Pentland, 1999, p. 717).

The wider context

To understand the SSPC story and how such innovation became possible, it is important to appreciate how the Irish economy, Irish Government policy and the global and local context of the pharmaceutical industry combined to create the necessary conditions for this innovation cluster to emerge.

Throughout the 1960s and 1970s, the Industrial Development Authority (IDA) promoted Ireland as a low-cost manufacturing base. However, as the Irish economy improved, Ireland became vulnerable to competition from other low cost countries. In an effort to shift the economy towards discovery laboratories, the IDA recognised that Ireland needed to develop the necessary infrastructure for science and technology. However, Ireland did not have any centres of excellence in this space, and collaboration between industry and academia was superficial at best (ICCSTI, 1999 cited in Van Egeraat, 2006). From 2000, government policy deliberately supported the development of a "knowledge economy" and began to invest in high-level technological infrastructure through Science Foundation Ireland (SFI). In particular, SFI began to promote and fund industry collaboration through an initiative known as Centres of Science, Engineering and Technology (CSETS) (van Egeraat, 2006). Recognising the potential for innovation through basic research (Orsenigo *et al.*, 2001), significant efforts were made to include academia in this innovative innovation collaboration. Specifically, a number of Strategic Research Clusters (SRCs) were established to link academia and industry through "focused attention to common problems" (Department of Enterprise, Trade and Employment, 2008, p. 13).

Findings: obligation, desire, competence and know-how

Key actors brought the cluster together and made it work by using their personal capabilities, the influence encompassed in their roles, by employing the narrative language of obligation, desire, competence and know-how. The idea and the impetus for the cluster came arose during a conversation between Philip and Donald from University 1. Industry commitment and participation was mobilised by Peter, a senior figure in one of the larger pharmaceutical companies. Following a successful funding bid, a project manager was appointed and played a key role in developing and supporting collaborative structures and processes.

Obligation: the context for action

Prior to the creation of the SSPC, the Irish pharmaceutical industry was characterised by arm's length relationships as are typical of the global industry (Henderson *et al.*, 1999). According to Peter, the atmosphere between MNE subsidiaries was such that individuals intentionally maintained their distance:

> I would say that ten years ago you were afraid to be talking to someone from another competitor company. I suppose there was that level of fear. I don't know where that originated, [but] there was real fear. [Peter, Pharmaceutical Company 2]

Although Peter is unable to explain this level of fear, it may be explained by the nature of competition between pharmaceutical MNEs, which historically has been concerned with protecting IP (Henderson *et al.*, 1999). As a result, competitors have been extremely slow to collaborate. The Irish subsidiaries of the pharmaceutical MNEs enjoyed a steady supply of manufacturing business from their parent companies. Within an increasingly global marketplace, Ireland's economic prosperity had a negative impact on Irish firms'

competitiveness (Van Egeraat, 2006). Indeed, as the Irish economy improved, particularly during the Celtic Tiger period from 1995 to 2007, Ireland became vulnerable to competition from other low-cost countries. Irish firms compete with other subsidiaries (of the same company) throughout the world, and decisions about where to manufacture ultimately rest with the parent company:

> Drug discovery would tend to come from head office. They would develop it to a certain stage and then they would go into clinical trials. And then towards the end of clinical trials they would start to think how are they going to manufacture it. And they would typically choose a plant, one of their plants around the world. It's at that stage the Irish companies would get involved. And they are competing to be the plant that gets the drug. And then they will manufacture it for some years. [Philip, University 1]

The dynamics of internal competition between subsidiaries became a critical determinant of which subsidiaries survive (Almor and Hirsh, 1995), and is largely driven by the track record of those subsidiaries (Birkinshaw and Hood, 1998) and the cost climate in which they operate. This competition between other MNE subsidiaries was recognised as a significant threat to the Irish pharmaceutical industry:

> As you may know, the pharma sector is under threat from India and China because they can produce materials much cheaper. [Donald, University 1]

Ireland was rapidly losing the basis of its competitive advantage over subsidiaries in other countries. In particular, the old manufacturing mandate was predicated on low cost production capabilities:

> Recognising that Ireland had moved from a place 20 or 30 years ago where we were getting investment for our low cost operation in addition to all the other advantages that are in Ireland that are well publicised like our tax, skills, access to European markets, access to English speaking skills and all of that. We knew that our old manufacturing mandate was not going to serve us in the future because of the impact of the Celtic Tiger raising our costs significantly. Therefore we were being challenged on a competitive scale by other locations. [William, Pharmaceutical Company 1]

In response to this acknowledged threat, industry participants created a special interest group as part of the Irish Business and Employers Confederation (IBEC)[3] as early as the late 1990s. As outlined below, this was central to breaking down the perceived barriers between firms:

> Having a group like IBEC PharmaChem Ireland[4], that's got people to get to know each other a bit better and relax a bit to share our challenges. In parallel the world was changing and our challenges were becoming more and more similar. Losing manufacturing was a problem that we all had. Then we were able to rally around this problem of how do we stop hemorrhaging manufacturing out of Ireland? [Peter, Pharmaceutical Company 1]

The threat to the pharmaceutical sector was perceived as very real. Moreover, as an industry that accounted for a quarter of Ireland's manufacturing output and 56 per cent of national exports in 2009, the potential impact of its failure on the Irish economy was untenable. The latter is evidenced in the excerpt below from PharmaChemical Ireland's Strategic Plan (2010):

> Ireland depends heavily on the pharmaceutical sector which generated over 50 per cent of Irish exports, worth some €44 billion, in 2008. Responding to the challenges facing the sector must be a national priority. In order to remain the great success story that Ireland has become,

> industry, government and other related stakeholders need to meet these challenges head on. Companies need to respond by linking research directly to manufacturing, via process and product development (Innovation and Excellence PharmaChemical Ireland Strategic Plan, 2010).

This excerpt clearly sets out the *obligation* for industry participants and for other stakeholders to address the "challenges" faced by the pharmaceutical industry. The report draws upon the widely accepted discourse of "Ireland as a great success story" and the role of the pharmaceutical industry within this. As a result, it is able to juxtapose the "challenges facing the industry" with the "national priority" and, thus, call upon the help of government and other stakeholders in responding to challenges. The actors are able to draw upon discursive terminology as a means of creating a communal identity and, thus, the group is bonded through a generalised connection to the issue in question. In this case, the terminology draws upon rhetoric surrounding the issue of challenging times facing Ireland. Recognition of the "need for change" (Ford and Ford, 1995) became a resource for actors to use, and helped create an environment for effective innovation collaboration:

> Of course behind all of this there has to be a reason for working in this area. It just so happens to be an area that is very difficult for the pharma industry and there was a burning platform. [Peter, Pharmaceutical Company 2]

The term "burning platform" has been a mainstay in the business lexicon for many years. It is arguably the ability to identify urgent issues that will have the greatest effect on securing stakeholders' willingness to change. The origin of the metaphor is attributed to an oil rig worker who, noticing flames, jumped 150 feet into the North Sea on the basis that it was better to face probable death than certain death (Embley, 2005). The metaphor is employed discursively, so that stakeholders are able to justify and articulate the need for change to survive.

Competence: the idea is born

Philip (an academic) had been involved in research on crystallisation (a chemical solid – liquid separation technique, in which mass transfer of a solute from the liquid solution to a pure solid crystalline phase occurs) within another industrial sector and Donald (a newly appointed member of faculty who had significant experience in the pharmaceutical industry), recognised its potential to be extremely beneficial to the pharmaceutical industry. Philip relays the conversation below where he was told:

> The kind of stuff you do here in crystallisation would be very interesting for them [pharmaceutical industry] because they have endless problems with crystallisation and it's a big, big issue for them. [Philip, University 1]

This conversation encouraged Philip to understand the nature of the problem in a pharmaceutical context. Being aware of broader societal discourses and policy developments, Philip explains his reasoning behind proposing a cluster in this space:

> And the whole idea was that we felt as a group that there just wasn't enough work going on in the Irish university sector to support the area. […] they wanted to have expertise locally. In the past when they came up against problems in the area of crystallisation, they would have to go to corporate HQ to get the problem solved. And they wanted to be able to demonstrate to the HQ that they could handle this locally. Because it's of importance for the next round if they can

> show technically that they are very efficient, they are more likely become the site that manufacture that drug rather than someplace else. [Philip, University 1]

Philip argues that Irish subsidiaries would be more likely to maintain manufacturing of existing drugs as well as secure contracts to manufacture new drugs [the next round] if they could demonstrate *competence* in crystallisation and other processes – rather than constantly having to refer problems back to head office. While the ability to manufacture at a low cost represents the traditional source of competitive advantage, Donald recognised that expertise in process control could be developed into an alternative and equally compelling basis of competitive advantage:

> However, with pharmaceuticals the labour costs don't tend to be the main thing surprisingly enough, because much of it is automated. So even though India and China can produce cheaper, they don't meet every regulatory requirement of the FDA and the European equivalent […]. We have an advantage here in that we have a very good record there, but companies are always trying to add more value to themselves. So from a regulatory side of things we do tend to do the best for ourselves by having good processes. [Donald, University 1]

In the excerpt below, Philip is presented as providing a solution to the burning platform. In this sense, he is validated much as the hero in the traditional romantic or quest literary genre, in which "a hero challenges the status quo, engages in various adventures, has setbacks but ultimately succeeds" (Downing, 2005, p. 195):

> So into that scene then comes [Philip] with a proposal for a cluster. Now within IBEC there was always a driver to increase research and development in the country. When this cluster came in then we recognized it was the potential way forward to get connected with companies and academia in a more systematic manner. [Peter, Pharmaceutical Company 2]

While individual MNEs were making efforts to improve their processes, the opportunity for more innovation might be realised through collaboration with other pharmaceutical MNEs and with academia. Having sketched out an initial proposal, Philip then approached academics in other universities to mobilise the necessary resources on which to create a platform for engagement with industry. Participants were intentionally chosen to represent all of the major universities and to provide different skill sets. The choice of participants paved the way for more effective collaboration by involving participants who would play complementary roles. This also provided an attractive and compelling proposition to industry. Following initial discussions, an academic team was established that consisted of two researchers from each of the five academic institutions. This team contributed detailed scientific information to the initial discussion document and, in parallel, through conversations with industry actors, gathered information on the practical challenges they were experiencing. This helped to delineate the "problem" that the cluster would focus on. Based on these conversations, the proposal for the SSPC was developed to represent the convergence of clinical, pharmaceutical, academic, commercial and other relevant stakeholders.

When SFI announced a call for applications for the development of SRCs, Philip had to work quickly to get industry on board:

> So we approached the industry then and we just profiled the kind of capacities which we had. They were very interested in the presentation that we made. There were some big names there who were opinion leaders […]. They were all quite supportive of the whole idea. They said this expertise is something that we definitely lack expertise in Ireland. [Philip, University 1]

Philip hoped to get two or three MNEs involved in the initial programme. Through a focus on "capacities" and "expertise", the process of attributing *competence* (Golant and Sillince, 2007) to the emerging cluster was initiated. This may have led industry to be more open to the concept of a cluster than had originally been anticipated:

> [Philip] […] was actually surprised with how receptive we were to his proposal […] He went around the companies and I think of all the companies only one turned him down and he ended up with 9 companies that would be prepared to work together with the institutions. [Peter, Pharmaceutical Company 2]

The proposal required only a minimal financial contribution from industry participants, thus removing a significant barrier to their engagement. This tactic was essential to the evolution of a successful group dynamic. Moreover, academia presented the potential benefits in financial terms to the technical decision-makers using the rhetoric of organisational effectiveness and competence. Thus, we see how discourse is both adopted and adapted depending on the target audience:

> If we cracked it we would actually have a gross margin return on investment for them, which would be very significant because crystallisation normally happens right at the end of the process […] if you can have a 1 per cent increase in yield by better understanding the process then you can have huge cost benefits […] So we did a calculation just to demonstrate on a compound, okay this shows how much you can save if we made the yield 1 per cent better. So that was how we convinced the technical people. [Donald, University 1]

Although the impetus for the initial bid came from academia, industry engagement and conversation with the external auditors was extremely important in securing funding:

> So basically SFI brought in a group of international experts to critique what the proposal was. This was pretty intense; they brought people in from the States and from across Europe and we supported them [the academics] on the day, and I think that was an important part of it because SFI could see that industry was engaged from an early stage […] We understood what things would involve and we stayed engaged with the process. So I think that carried it over the line. We brought in SFI funding to the tune of around 7 million. [Peter, Pharmaceutical Company 2]

The group had established itself as a "discursive object" (Hardy *et al.*, 2005) through successfully defending the SSPC proposal to the expert panel.

The SSPC is formed

In 2007, the SSPC was established as one of three SRCs, and secured funding of €6.97 million from SFI. Its focus was to support knowledge clusters to create distinctive capabilities that would ensure that Ireland remained competitive in the global pharmaceutical industry (Hannon *et al.*, 2011). The SSPC was formed ostensibly to conduct research in the area of crystallisation of pharmaceutical solids and has already developed and utilised important capabilities in process innovation. Significantly, Philip chose to divide the funding equally among the participating universities, which has not been the case in other SRCs, nor indeed, in many collaborations worldwide. This innovation ensured full cooperation from the academics involved and inevitably helped establish collaboration. Equally important, a project manager familiar with the culture and practices of both industry and academia was appointed. This ensured more effective communication both between and across groups.

The SSPC governance structure is intentionally inclusive, comprising a Scientific Director, an SRC Operational Committee and an Executive Committee. The operational

committee is chaired by the project manager and includes the scientific director and representatives from the academic partners. Being industry informed is critical to the success of the research of the SSPC and, from a governance perspective, this is achieved by the Executive Committee which includes the operational committee members, an independent chair and five industrial members.

Desire: building "Ireland Inc."

In keeping with the notion that discourse serves to constitute a sense of reality for social actors (Hardy *et al.*, 2005), members of the SSPC actively incorporated the discourse (disseminated by the Irish government and reinforced by governmental agencies) that the pharmaceutical industry represents a burning platform whose resolution is critical for Ireland's future success:

> If they can show capability in Ireland, that does all of the companies that are based here good. It means that there is a strength developed within the country. [Donald, University 1]

In explaining the new mindset, Donald illustrates the gravity of the challenges faced by the Irish pharmaceutical sector. In choosing to identify "sister companies in other countries" as the focus of a metaphorical fight, Donald invokes images of organisations, which were previously competitors, coming together to fight for Ireland in the global marketplace. This metaphorical light is around process control and innovation. When we consider the previous narrative of "real fear", it seems that changing conditions created opportunities for the corporate bond to be eschewed to protect the "Irish facility" of that company. By individually aligning with the "Irish facility" of the company, there seems to be a perceptible shift towards country over company, as evidenced by other narratives:

> […] people's first responsibility is to their companies but there is a kind of commitment to Ireland Inc., as they say, you know. People are proud of the success of the industry in this country and people are generally very happy to see the success of other companies here. On a local level the cooperation is much stronger than competition […]. [Geoff, Pharmaceutical Company 3]

The term "Ireland Inc." is prevalent in several other narratives. It was never explained. Rather it was assumed that those who created the narrative and those who would be exposed to it would implicitly understand its meaning. This demonstrates that the term had become part of the lexicon of familiar conversation. "Ireland Inc." borrows from the broader discourse of a successful Ireland, and directly supports government policy to develop Ireland's competence as a "knowledge economy". By juxtaposing "Ireland Inc." with the "success of the industry", the discourse that the success of Ireland is inextricably linked with the pharmaceutical industry is in turn reinforced. While the basis of Ireland Inc. is a knowledge economy – the output of that economy is innovation in products and processes. By creating this meaningful identity between subsidiary and country, local management is empowered to "take certain actions for the benefit of their country and for themselves" (Birkinshaw and Hood, 1998, p. 774). For the Irish pharmaceutical sector, this action is collaborative in the hope that breakthroughs might be found that would fundamentally change the competitive landscape (Leifer *et al.*, 2000):

> For some of the companies, they view [collaboration] as much of a strategic benefit to Ireland as it was to their own individual companies […]. I think the nature of the companies in Ireland [is that] for them, their competitors may be sister sites in other countries […]. [Kevin, University 3]

The way in which MNEs are structured in a global economy results in a more tangible competition between subsidiaries in other countries, rather than with competitors in Ireland. MNEs are beginning to recognise the advantages that can be gained through pooling resources and expertise and this is reflected in a more open attitude towards collaboration (Fillieri *et al.*, 2014). Importantly, this rationale enabled group members to "construct themselves, the problem and the solution as part of a collaborative framework in which the potential for joint action is both significant and beneficial" (Hardy *et al.*, 2005, p. 63). Thus, the *desire* to build "Ireland Inc." provides an enduring rationale for collaboration.

Know-how: creating structures, routines and practices

Participant narratives provide some insight into this changing attitude within the industry. SSPC developed a very specific mandate in terms of focusing on improving the crystallisation process. All participants engaged in lengthy discussions on how best to deal with IP issues, and an IP committee was established. As a result, participants decided to work on generic compounds, thus alleviating the fear associated with IP infringement, and creating opportunities for the development of trust, which is conceptualised as an important intervening construct in knowledge creation (Niu *et al.*, 2012):

> So the first thing that we did was we set in place communication sessions whereby we would meet quarterly, we would work on generic compounds and demonstrate our capability. […] So we did some basic research over the first couple of years and showed that we could improve the process […]. [Tom, University 1]

In September 2008, the academic partners underlined their commitment to the collaboration process by rolling out training modules for collaborating partners, in various locations, on topics specific to the cluster:

> We were creating clustering opportunities, opportunities for them to share information. The cluster really helped that because it structured it, it wasn't just ad hoc. There were the coffee sessions and the lunch sessions where people would get to talk but this was kind of how do we codify the information and make it usable for others so you didn't have to be at the training sessions to hear about that bit of information. It's much easier to share it once you've captured it. [Donald, University 1]

High-level training was provided which focused on demonstrating the underlying research behind the processes in which they were actively involved. Thus, the cluster began to create an environment in which individuals could learn, engage in constructive confrontations and challenge others' points of view. These strategies helped to invoke a focus on developing *competences* into *know-how* (Golant and Sillince, 2007), and was intensified by encouraging MNEs to directly interact with academics to resolve any crystallisation problems they had.

The "program for action" was not determined in advance, but further evolved through a long process of engagement and interaction, this structure evolved:

> The whole thing has changed in the five years […]. We started off with a programme for SFI […]. [but] at the mid-term review three years later, it was all completely different […]. And that's what they want from the cluster. [Philip, University 1]

In addition to providing training, clustering opportunities and more focused problem-solving, the cluster embarked upon an ambitious venture to create a "best practice crystallisation port":

> We looked at the manufacturing process of an active ingredient and we divided it into logical blocks and see if we can put teams together that will study the state of the art in terms of literature and what is happening in companies and write a best practice approach for crystallisation of the pharmaceutical compound. So we said let's put some academics, students and industry people from different companies into 8 groups and put them working together. We ended up with about 64 people working on this and I think the fact that we did this and we had the training done kind of gelled the cluster early on. It broke down a lot of barriers because all of these people were openly sharing information about how to do things. [Tom, University 1]

The cluster developed the Best Practice in Crystallisation website (BPX) that was launched on the 6th of November 2009. The formation of BPX.i.e. is an innovation, resulting from the combined efforts of academic and industrial members of the SSPC, working together to define the current state of the art in pharmaceutical crystallisation. As such the BPX website is recognised within the cluster as a testament to the success achieved through collaboration. Putting together eight teams involving academics, students and industry, people allowed participants to work in small groups. A major part of the process was capturing tacit knowledge and sharing it through a purpose built website, essentially a form of knowledge codification. This was a hugely important aspect of the learning relationship, with information becoming transparent, less sticky and essentially easier to access. This had a profound impact on the learning community, as it provided a designated arena to store and access the knowledge that was being developed by the group. Ultimately, the learning that took place allowed each MNE to transfer expert knowledge that was being developed by the SSPC group back to the individual MNEs, thereby contributing to each MNE's capability to compete more effectively within their own corporate structures:

> It probably has achieved more than we thought initially. That's normal enough - you wouldn't anticipate everything, you know. But we've had very good people. They've all had their – there has been a lot of engagement. The people involved are all genuinely interested. No one has left the cluster. We're all still together, we're all working together. [Philip, University 1]

At the mid-term review, the extent to which the cluster had developed important *know-how* becomes apparent:

> Companies actually started to really buy into it. It was the first time they thought it was a relationship and they were learning. They found that they were learning as much from their peers as they were from the academics. [Donald, University 1]

While the formation of the cluster may have been motivated by the creation of capabilities for Ireland Inc., there is recognition that the actors and their companies have also benefited. This is important for actors' internal conversations in their own companies (Hardy *et al.*, 2005). Initially framed as Ireland Inc. against the "sister companies" in the global marketplace, one participant identifies how this has in some sense come full circle with the parent companies now benefiting too:

> Their reaction is "Oh my god you're sharing stuff with [other Pharmaceutical]" followed by "Can we get access to it?" […] that's what the cluster is about, its taking that common knowledge and putting it into one place. It's very powerful. [Peter, Pharmaceutical Company 2]

Peter's narrative provides some relevant perspective and context on the level of innovation achievement that the SSPC has attained. Here, we see how the best practice website represents a final output that is valuable to parent organisations. While his colleagues at Pharmaceutical Company 2 are initially shocked at the fact that this information is being shared with others, their next reaction is to look for access. By developing know-how by capturing, codifying and sharing knowledge, value is ultimately created for the Irish firm, as they gain a specific area of expertise, which aids them in competing against sister firms within their own corporate structure:

> The bigger the company the more they tend to communicate with head office. They just want them to know what's going on. Sometimes there is a kind of perverse delight in saying corporate couldn't solve this problem but we did. [Philip, University 1]

"Narrativizing" the future

Interestingly, Philip recognises that because the cluster has been so successful, much of the expertise held by academics has already been transferred:

> We won't always be the people they will work with. In many ways, a lot of the expertise we have has been transferred, and will continue to be transferred through the graduates and the PhD students in the coming years. There is also a sense in which the companies feel that they've definitely beefed up their expertise in this particular area. [Philip, University 1]

While this might represent the end of this particular cycle of collaboration, it seems that the industry has additional challenges that need to be solved. Moreover, despite the rhetoric around the significance of the industry to Ireland, Philip suggests that the industry has secured very little national funding:

> I suppose one of the things we've tried to make them aware of is that there is this enormous Irish national R&D budget which is knocking around. And that as an industry the pharmaceutical industry has got very little up to now. Some areas in which we have much less either multinational or indigenous industries - or none for that matter - would have got a much larger share of the pie than the pharma got. So they are now aware of this as well! And they are being much more involved in lobbying so that they can ensure that they get a more significant part of the pie. [Philip, University 1]

While, to date, the industry has secured very little of the national R&D budget, industry participants are now more actively employing the discourse to influence how national budgets are allocated. The cluster is currently developing a new proposal that focuses on the synthesis phase, and it will seek significantly more funding from SFI.

Discussion

The SSPC is presented here as a successful innovative cluster among ostensibly competing MNEs in the Irish pharmaceutical industry. It is narrativised in this way by participants, industry leaders and academics. While this part of the story is clearly nearing completion, new challenges have been identified and through its current funding bids and collaborative research plans, the SSPC continues to be narrativised as an organisation in pursuit of a quest. Whether this represents a new chapter in the current story or a sequel is, as yet, unclear. In any case, the protagonists have learned from each other, not only in terms of improving crystallisation processes, but more fundamentally, in terms of effective innovation collaboration.

In terms of understanding how this innovation cluster works so effectively, the members to whom we spoke articulated the moral legitimacy of the SSPC. In terms of the modal constructions, the *obligation* to address industry problems is narrativised by participants through reference to the *burning platform*. Industry-specific reports published by governmental agencies served as a medium to construct and reinforce the idea that the pharmaceutical sector was at a critical juncture.

By identifying the industry as an integral element of Ireland's "knowledge economy", future success for both industry and country are integrally linked. Thus, addressing the problems facing the pharmaceutical industry became an Irish problem, involving not only industry participants but also government and academia. This "narrativization" thus served to identify government and academia as important stakeholders with significant resources to be called upon. Pragmatically, the legitimacy and contribution of SSPC to this agenda was achieved through developing specific competences. While this helps us to understand some of the SSPC story, it does not particularly explain why the cluster was so effective. Here, the work of Hardy *et al.* (2005) sheds some light, both in terms of explaining how the SSPC was situated within wider societal discourses.

While *obligation* represents a strong "need for change" (Ford and Ford, 1995), it was through the articulation of the vision for Ireland Inc. as a vibrant, successful knowledge economy and location of choice for pharmaceutical manufacture that the modality of *desire* was associated with the cluster (Golant and Sillince, 2007). Thus, an emergent identity was discursively produced and provided a basis by which participants could identify issues as being "relevant to their organisation and consequently identifying themselves as interested and affected by it" (Hardy *et al.*, 2005, p. 64). While the modal constructions of either *obligation* or *desire* may have been sufficient to create a bond, together they represent a compelling argument that identified "a context for action (also termed "breach") and a quest or set of objectives for the protagonist to respond to this context" (Golant and Sillince, 2007, p. 1,153).

In this example, we see how various discourses were used to create the *moral obligation* and the shared vision (*desire)*, which led to routines, practices and artefacts that demonstrated *competence* and *know-how*. Moreover, because this discourse was embedded in government policy through funding mechanisms, it also secured access to the necessary resources to realise the vision. Finally, the SSPC demonstrated *know-how* through the creation and sharing of the BPX.i.e. website. The website became a further artefact on which they could draw to signal their expertise in conversations with their parent organisation. Thus, successful outcomes reinforce the discourse of collaboration, rendering future successes more likely.

The wider discourse of collaboration also became a resource upon which actors could draw to articulate how they might respond to the context and realise the vision. Because this discourse is promoted in government reports and embodied in government strategy, the protagonists were able to borrow from the discourse to secure the necessary resources (in this case funding) that would enhance the possibilities of more effective collaboration. This is because different stakeholders engage with discourse in ways that help to create the outcomes they desire. It was noticeable that the leaders within the SSPC recognised the importance of discourse to innovation collaboration, and on this basis, they successfully adjusted the use of terminology in relation to the exchange partners they were addressing. When addressing potential partners within

industry and academia they utilised both the "burning platform" and "Ireland Inc." metaphors around the need for innovation and action. By focusing on the specific problem of crystallisation, and using the discourse of collaboration, synergistic action was inspired. When seeking approval from host organisations, they spoke in terms of return on investment and the potential to add value, part of the discourse of organisational effectiveness. Consequently, we stress the benefits of understanding audiences and adjusting discursive approaches on this basis.

Conclusion

In developing competitive advantage in MNEs, the ability to share and integrate intra-organisational knowledge (Mäkelä *et al.*, 2012) and inter-organisational knowledge is critical. One way to achieve this is through collaboration within a social community whose purpose is to create and transfer knowledge (Morosini, 2004). This paper reiterates the centrality of a positive government policy (Arthurs *et al.*, 2009) and the pre-existence of social capital (Fillieri *et al.*, 2014) in creating an innovation cluster. However, it goes further by demonstrating how language, metaphor, narrative and discourse (Hatch, 1997) becomes strategic resources on which actors can draw to create desired realities (Hardy *et al.*, 2000) particularly in terms of collaboration and innovation. Moreover, this case highlights how dialogue between MNEs and academics was encouraged throughout the process of establishing the cluster and has continued to be an important element. Rather than imposing some grand design, the SSPC cluster is and always will be emergent. In this sense, in the early stages of collaboration, *detecting* and *supporting* existing and emergent communities was essential to success.

The emergence of the organisation as a protagonist in pursuit of a quest was explored using Golant and Sillince's (2007) four modalities, *obligation*, *desire, competence* and *know-how.* The study concludes that the *obligation* stemmed from the need to address industry problems in the pharmaceutical sector which was at a critical juncture. The modal constructions of *obligation* and *desire* led to the establishment of routines, practices and artefacts that demonstrated *competence* and *know-how* through the creation and sharing of the BPX.i.e. website. This enabled resolution of two key conditions essential for the success of each MNE involved – localisation and maximisation of knowledge in Ireland, and the transfer of knowledge back to parent organisations (see also Mudambi and Swift, 2011).

In conclusion, the context-specific narrative accounts provided in this study further extend our understanding of the processes through which innovation is enacted (Ettlie and Subramaniam, 2004). While the particular examples of how obligation, desire, competence and know-how were mobilised may be peculiar to the Irish pharmaceutical context, it is likely that in the creation of other clusters, these modalities are likely to be equally important, if manifest in different ways. Second, we have articulated how different discourses are mobilised by actors at different stages of development and for different audiences to create desired innovation outcomes. Finally, we see how discourse and practice are dynamic, as participants articulate their intention to exert further influence on innovation discourse through their lobbying activities. These insights can offer a useful conceptual framework for investigating the creation of other clusters as well as a guide for managers as to how to positively influence cluster success through engaging and interacting with stakeholders within their particular environment.

Notes

1. The academic contributors are University of Limerick, National University of Ireland, Galway, Trinity College Dublin, University College Dublin, and University College Cork. The Pharmaceutical Company members are Janssen, Schering Plough, GlaxoSmithKline, Merck Sharpe and Dohme, Roche, Pfizer, Eli Lilly, Clarochem, Hovione, and Bristol Myers Squibb.
2. SSPC website is www2.ul.ie/web/WWW/Faculties/Science_%26_Engineering/Research/Research_Institutes/MSSI/Research_Themes/SSPC/Governance (accessed 27 March 2015).
3. IBEC is a business clustering forum and within this there had been a pharmaceutical group in existence since 1994. Strategic issues were discussed but no formal collaboration had emerged until after the proposal for the SSPC cluster.
4. Pharmachemical Ireland is a subsidiary of the Irish Business and Employers Confederation (IBEC) that focuses on the pharmaceutical and chemical industries in Ireland.

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