

Introduction to the Special Issue: Transferring Knowledge for Innovation

A.T. Alexander*, A.-K. Neyer & E.K.R.E. Huizingh

Centre for Innovation & Service Research, University of Exeter Business School, Exeter, EX4 4ST

Faculty of Law, Economics & Business, Martin-Luther-Universität, Halle-Wittenberg, Universitätsplatz 10 a, Große Steinstraße 73

University of Groningen, Faculty of Economics and Business, Department of Innovation Management & Strategy, P.O. Box 800, 9700 AV Groningen, The Netherlands

1. Forward

Knowledge is complex, is unarguably essential as a component of commercial innovation and the realism is that the pool of available knowledge across the globe is rapidly increasing.

For centuries philosophers have debated their respective epistemologies, arguing for knowledge culturalism vs. knowledge capitalism or adopting a modernist (or classical) view vs. a post-modernist view, along with many other non-convergent perspectives. Attempting to bridge some of these divides, the field of Strategic Knowledge Management is seated in both realism and pragmatism (Wallace et al., 2010) and looks to explore how knowledge can be practically harnessed to create strategic advantage (Venkataraman and Tanriverdi, 2004, Baskerville and Dulipovici, 2006, Sheffield, 2009) – our special issue aims to contribute to the understanding of this field.

Organisations increasingly rely on their knowledge, whether they consider this to be their organisational knowledge, or the aggregation of the knowledge of their staff. This knowledge contributes to developing their products, delivering their services, governing their value creation and to every aspect of their business activity. Many organisations increasingly realise they need to access new knowledge to remain competitive, but they struggle to achieve this, in practical terms (Teece, 1998, Bessant et al., 2005, Gray, 2006, Bessant and Venables, 2007, Adams et al., 2011) – our special issue introduces practical mechanisms and theories relating to how new knowledge can stimulate and support innovation.

Knowledge is created through original research, or by the interaction and interplay of individuals, recombining their experiences, insights and ideas (Liebowitz, 1999). This knowledge creation often occurs in different locations or at different points to time to where it might be utilised and so the discipline of transferring knowledge is important (Argote and Ingram, 2000, Howard, 2005, Mitton et al., 2007, Alexander and Childe, 2012). Our special

issue consider knowledge that is created in our higher education, or public and private research organisations and also considers knowledge that is created at the interfaces of interactions and organisation, but more importantly considers how knowledge is transferred into companies and public organisations. With estimates suggesting that the volumes of knowledge is exponentially increasing, the rate of new knowledge coming on line is currently estimated to be doubling every 12 hours (Gover, 2010 c.f. estimates made by IBM in 2006), the imperative for organisations to become effective adopters and exploiters of new knowledge is considerable (Agrawal, 2001, Holi et al., 2007, Sharifi and Liu, 2010, Hewitt-Dundas, 2012) – this is a primary driver for our special issue.

Conceived as part of an International Society for Professional Innovation Management Special Interest Group (ISPIM SIG) the topic of ‘Transferring Knowledge for Innovation’ was recognised by the ISPIM Scientific Panel as being of growing importance, but they also recognise the field is under-researched, particularly in terms of developing practical insights into stimulating, managing and delivering success to the organisations who participate in these types of knowledge transfer projects, where success is realised in terms of innovation.

2. Knowledge - A strategic asset?

Knowledge management is a field that consists of a number of contributory elements, two of these being ‘Knowledge-based Management’ and ‘Strategic Knowledge Management’ (Baskerville and Dulipovici, 2006). Arising from IT & IS Systems theory, knowledge-based management is technologically-driven, positivist in its philosophical perspectives and dominated by ‘hard’ systems theories (Venkataraman and Tanriverdi, 2004). Strategic Knowledge Management however, is different. It arises from softer theories, is seated in the fields of ‘core competence management’ and ‘organisational capabilities’ (Beckman, 1997), arises from the resource-based view of the firm (Barney, 1991) and is particularly relevant in studies of dynamic capabilities (Teece, 2009).

As a research field, strategic knowledge management is steadily becoming more mature. If we consider a four stage lifecycle of research (for example Birth, Growth, Maturity and Demise (Keathley et al., 2013)) early papers that first explained the field came forwards in the late 20th Century (Wiig, 1993, Nonaka and Takeuchi, 1995, Grant, 1996). Following this key authors built on this concept in the first decade of the 21st Century, writing contributory and fundamentally exploratory articles, this research set out barriers and enablers for the effective management of knowledge, strategic to an organisation (Civi, 2000, Argote and Ingram, 2000, Bedward et al., 2003, Bessant et al., 2005). In the second decade of 21st Century strategic knowledge management is still in a growth phase, but rather than having a generalised and discipline-agnostic focus, the new studies are set within key contexts

(Desouza, 2006, Easterby-Smith et al., 2008, Alexander and Childe, 2012). Wallace (2010) reflects on the maturity of the field, as part of a comprehensive review of the literature. He suggests that the field is still fragmented, with some contextual situation receiving much attention and others little. He also notes, as a result partly of its origins and partly due to its relative immaturity that many of the studies published in the field cover a wide range of methodologies and collect both structured and unstructured data which is qualitative and quantitative in origins. The papers brought forward in this Special Issue echo this, and cover a range of approaches to explore the phenomenon of knowledge transfer.

3. Establishing a context

One common theme within the papers within this special issue is the interaction where knowledge is created, shared and transferred between actors, that are working within a system of innovation. One theory used to explain this context is the triple-helix of university-industry-government interaction (Etzkowitz and Leydesdorff, 2000, Agrawal, 2001, D'Este and Patel, 2007, Etzkowitz, 2010 etc. etc.), which acknowledges a level of interdependence and interaction between three key stakeholders, who create, share and internalise knowledge to create a knowledge-based economy. The triple helix model suggests that over time, the three sectoral groups evolve processes and systems that deepen their relationship (and thus their interdependence) and as a result achieve greater value from their collaborations. This deepening of relationships is underpinned by the disciplines of knowledge transfer, where there is a chaotic and non-linear interplay of knowledge, combining and recombining ideas and experiences to create new knowledge. This may be discovered initially within universities and research organisations and applied and utilised by the industrial partners. This societal level of interaction forms the foundation for a national systems of innovation (Ranga and Etzkowitz, 2013).

Additionally a temporal dimension is brought forward by one paper in this special issue, which highlights the progression from the triple helix model of government, industry, academia interdependence toward a more inclusive models, which now include society and at a sub-societal-level recognises the roles that customers play in this interdependent collaboration (Carayannis and Rakhmatullin, 2014). Open Innovation is fuelled by the drivers of open and unconstrained flows of knowledge (Chesbrough, 2003) between end-users and customers and where co-creation of products and services can be undertaken as a collaborative process (Bessant and Moslein, 2011). This is the fundamental context that is used to extend the triple helix model into a quadruple and more recently a quintuple helix form.

One fundamental tension with these multiple stakeholder models is that of demand vs. supply (or push vs. pull) (Kitson, 2009) and we present papers that are set within both a knowledge

push perspective as well as a knowledge-pull perspective. We also include articles that consider knowledge, within this triple helix model, where knowledge is not purposefully transferred across knowledge and organisational boundaries, but that spills over due to a range of factors and is then adopted and internalised by the recipients.

4.0 Moving toward clarity

To aid in the grasp of these fragmented contexts and complex tensions, we have adopted a theory from the field of strategic management, that of the ‘attention-based view’ (Ocasio, 1997) in an attempt to explain some of the tensions between non-complementary theories within the field of strategic knowledge management. The principle of situated attention enables an end-user to mobilise an innovation lens (or as referred to in a knowledge transfer context the pulling of knowledge from the creators to the end users). In our example this emphasises the importance of the situational context in explaining why entrepreneurs and senior managers pay attention to different knowledge foci. Given the multitude of options, methods and strategies for the effective management of knowledge, this perspective reminds both researchers and managers alike that a specific “focus of attention” (Ocasio, 1997: 192), i.e. the “limited set of issues and answers” is influenced by the organizational and situational context in which individual decision-makers operate (Nisbett and Ross, 1991). While reviewing the papers we received for this special issue, we identified three overall situational contexts, which we argue have influenced the attentional foci and thereby shaped the decision-making in the corresponding studies, assuming we are adopting a pull-perspective. These are the activity level, the firm-level and the society-level.

The *activity level* can be characterized by two distinct types of “doing”. This includes a) all behavioural patterns, which determine the interplay of different types of innovators (Neyer et al., 2009). Second, ‘doing’ is reflected in distinct instruments and methods, which are applied to enable knowledge activities, i.e. creation, transfer and utilisation. We equate this activity level to the study of the activities that occur within individual projects and between individual actors and include the processes and procedures that are employed to manage individual projects.

The *firm-level* comprises all intra- and inter-organisational processes, structures and systems which act as management tools to aid in the transfer of knowledge between and across firm boundaries. These may also be enablers or barriers for knowledge activities where knowledge transfers across company boundaries and between organisations. The society levels moves to a higher level of abstraction and considers the interaction of organisations or individuals in aggregate and as part of a national system. In the quadruple and quintuple helix context these

groups of organisations consist of industry, academia, government, society and end-users (or customers).

Attention-driven decision-making is the opposite of strategic selection and thus, needs more a more nuanced level of understanding. We believe this knowledge-pull focussed approach helps us to consider the papers in our special issues as these research articles have origins which are equally diverse, extending from largely quantitative studies focussing on how and when knowledge spill-over occurs in R&D to qualitative studies focussing on how knowledge is transferred across organisational interfaces and how knowledge is adopted, assimilated and utilised. To further enable the reader to position the paper that they read in this Special Issue relative to one another and to other papers in the field, or even as the foundations for an heuristic which could be developed to categorise existing works in the field, Figure 1, presents the boundaries within which the papers in the Special Issue are set. Taking one perspective from the progression between creation, transfer, adoption, utilisation, Figure 1 contrasts the shows the situational contexts which trigger individuals' attention.

The papers within this special issue begin with those papers which present studies dealing with an activity-level context. The first two papers are dealing with a more instrumental-oriented 'doing' perspective of the activity level whereas the third paper applies are more behavioural 'doing' perspective.

Großmann, Filipovic and Lazina's paper entitled "The strategic use of patents and standards for NPD knowledge transfer" focusses on the challenge of trying to establish a balance between the requirements to standardise operational outputs (thus creating outputs which are wholly imitable) or to trying to protect these outputs by registering their uniqueness within a patent (thus more inimitable). The paper provides some practical insights about organisations can balance this tension. The second paper entitled "Thin or thick? The influence of contractual structure on organizational learning" written by Leone, Reichstein, Boccardeli, and Magnusson emphasises the power of distinct types of licensing contracts on the licensees' likelihood of introducing new inventions. This suggest that if Licensees that are more familiar with the licensed technology they are likely to be more able to adopt the proprietary technology and require less knowledge transfer as a result. However the authors suggest this substitution effect is neutralised once the invention has been developed, suggesting that when they gain both internalised and applied knowledge once they have undertaken this activity and have a better understanding as a result. The third paper is titled 'Playing possum, hide-and-seek and other behavioural patterns: knowledge boundaries at newly emerging interfaces". Here the authors, Rau, Moeslein and Neyer, show that different types of knowledge boundaries result in different knowledge transfer' behaviours exhibited by the stakeholders involved.

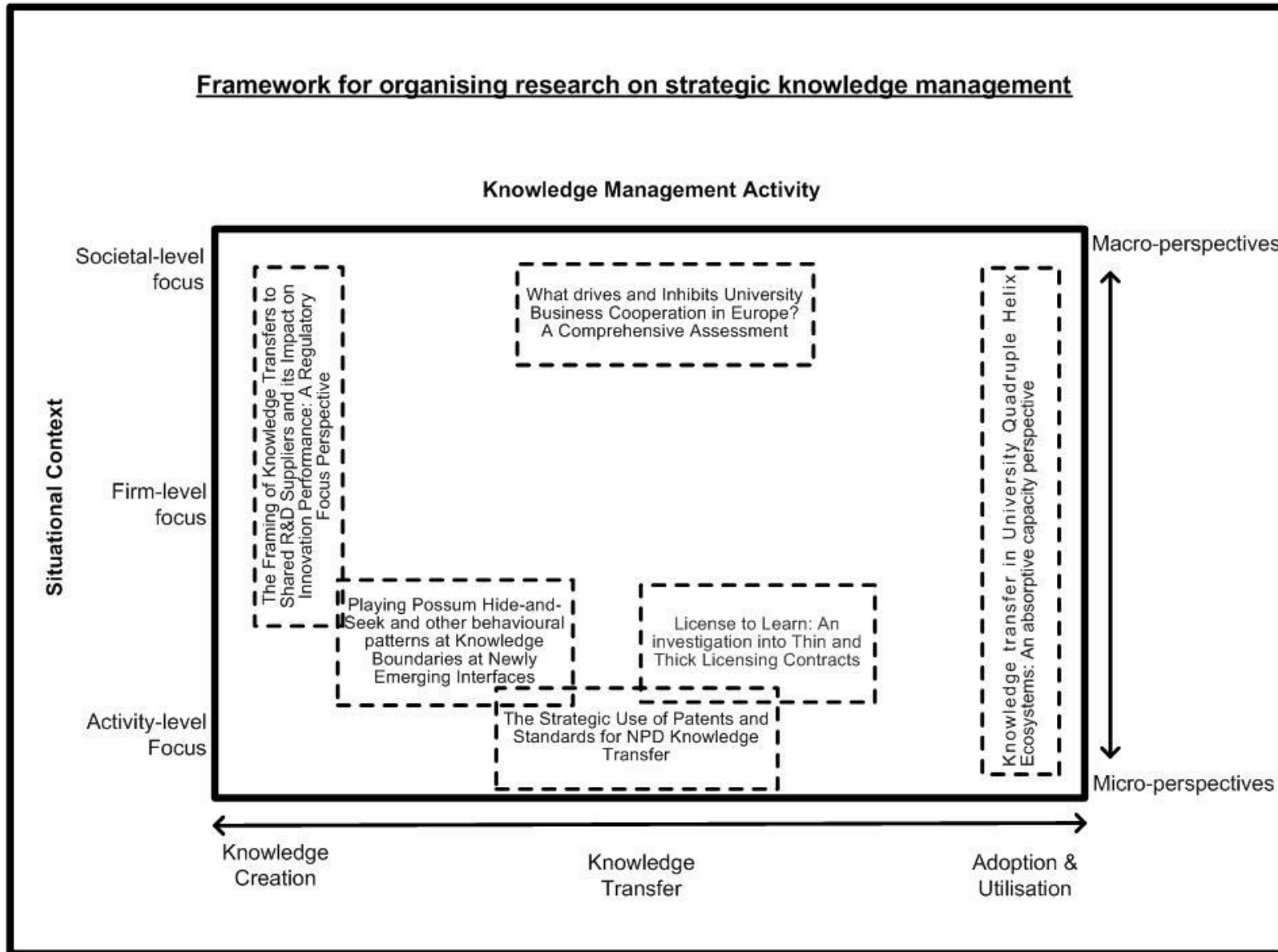


Figure 1 – A theoretical framework for organising research on strategic knowledge management.

Being aware of what is happening at a variety of newly emerging knowledge interfaces enables a more nuanced understanding of how and why innovation managers focus their attention to distinct knowledge sources. The attentional foci of the paper by Leone et al. and Rau et al. emphasise the importance of making a clear distinction between the respective situational contexts across our introduction, whilst also providing findings that provide an insights specifically at the firm-level focus.

Our fourth paper, focussed on a firm-level situational awareness, with the title “Knowledge transfers to shared R&D suppliers and innovation performance” written by Martinez-Noya and Garcia-Canal argues that the client’s commitment to the process of knowledge transfer, that transfers knowledge between suppliers, will depend on whether the shared relationship is framed with a ‘promotional’ or a ‘preventional’ focus. They find (among others) that sharing suppliers with competitors only boosts the client’s innovative performance when outsourcing R&D services that do not require the transfer of tacit and firm-specific knowledge. Again, whereas the primary attentional focus is on a firm level, the paper has important implications for the societal level as well. Taking a societal-level focus of attention, the paper entitled “What drive and inhibits university-business cooperation in Europe? A comprehensive assessment of barriers and drivers” by Galan-Muros & Plewa shows that while the identified drivers of university-business cooperation significantly affect the development of all cooperation activities, barriers have a more diverse effect. While significantly limiting research and valorisation activities, these barriers barely impact on cooperation-based knowledge transfer activities in education. Also, their research highlights that even if academics perceive no barriers to collaboration they still may not cooperate with business if there are no drivers in place accordingly.

The challenges inherent in ensuring an individual pays attention to distinct situational contexts, is presented in our final paper, which is set across the three context (individual, firm and society) but make comments relating in turn to each context. Miller, McAdam, Moffett, Alexander & Puthusserry, in their paper “Knowledge transfer in university quadruple helix ecosystems: an absorptive capacity perspective” present a framework that was derived in a triple helix context, but which is then refined and revised into a more “open innovation” context, where society represent a fourth helix in a quadruple helix model. The findings identify five factors, namely human centric factors, organisational factors, knowledge characteristics, power relationships and network characteristics, which mediate both the ability of stakeholders to engage in knowledge transfer and the effectiveness of knowledge acquisition, assimilation, transformation and exploitation.

5.0 Closing Comments & Further Work

By considering knowledge, from a strategic knowledge management perspective and adopting a pragmatist's perspective (relating to the knower and the known), we have considered research within this Special Issue that focusses on the management of knowledge as a firm's strategic asset. To aid the reader and to try to categorise the research in this field we have also considered a situational awareness, as a proxy for how this research might link organisations who are able to internalise and adopt new knowledge and turn this new knowledge into new innovations. We have not made significant inroads into the demand-based challenges in knowledge transfer however. If we consider knowledge transfer as an immature field, within strategic knowledge management, a field that is in a growth phase, we could suggest that the studies that we have seen in this special issue are still only scratching the surface of the demand challenge. Across the world the focus is still on understanding the push model of knowledge transfer, where knowledge is created and then pushed into the industrial world – this is in part due to the staid and slow moving pace of the world's universities and partly due to the inability for organisations to be able to articulate what and how they require this knowledge. By offering a situational awareness approach we hope that we have made a step to explaining to scholars in this field that they must consider the whole spectrum of situational contexts as they attempt to rationalise and make sense of knowledge transfer. They must also attempt to latch their respective studies into specific contexts and not hoping that they are generalisable across all situational contexts. This discrete focus on situational contexts and the founding of research within these contexts may well signify that the field of knowledge transfer is maturing, but we see no evidence of this from our Special Issue.

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