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EDITORIAL

Beyond the conventional boundaries of knowledge management: navigating the emergent pathways of learning and innovation for international development

This issue of the *Knowledge Management for Development Journal* focuses on the connection between systems thinking in knowledge management for development (KM4D)[1] and systems thinking in innovation management for development (IM4Dev), as both of these approaches have been adapted from systems thinking in business innovation and entrepreneurship. Within the KM4Dev community of practice, and in the wider field of knowledge management, the emphasis is often and logically on knowledge sharing and interactive learning, within organisations and between organisations, and at networks and systems levels. Such knowledge sharing and learning should support innovation, growth and development for the benefits of low-income countries. Such a focus on interactive learning and social learning and innovation resonates with innovation systems thinking that has recently gained its space in international development (see e.g. Pant and Hambly-Odame 2006, World Bank 2006, Lundvall *et al*. 2009, Kraemer-Mbula and Wamae 2010) and has influenced thinking and practice on IM4Dev (see STEPS Centre 2010).

Development of approaches to KM4D and IM4Dev

In several of the articles in this Special Issue (Horton *et al*., Schut *et al*.), an explicit comparison is made between KM4D approaches and innovation systems inspired IM4Dev approaches. In a sense, a similar evolution in thinking in much of the generic KM4D approaches and knowledge sharing and learning approaches related to innovation has taken place.

As Ferguson *et al.* (2007) note, KM4D has developed from linear 'knowledge transfer approaches' often focusing on information and communication technology (ICT) for storing, managing, and transmitting knowledge (1st generation KM), to enhancing the capacity of individuals and groups to produce new knowledge that they need to achieve their goals (2nd generation KM) but still with often a clear distinction between formal 'knowledge producers' and 'knowledge users'. In the latest generation of KM4D approaches (3rd generation KM) there is a focus on 'situated mutual learning', in which different groups and organisations with different interests and social positions interact with one another to generate commonly shared knowledge, and co-produce new knowledge in what can be seen as a negotiation process to reconcile different interests.

In a similar vein, in innovation studies, there used to be a focus on linear knowledge transfer. Taking the example from agriculture, the empirical focus of many articles in this Special Issue, this was embodied by a 'transfer-of-technology' approach, from research to farmers via agricultural extension services (resembling 1st generation KM thinking).

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However, this view also evolved to interactive and two-way knowledge exchange processes in approaches such as Agricultural Knowledge and Information Systems resembling 2nd generation KM (see Röling 2009 for an overview). Also here the learning processes between actors have been conceptualized as negotiation processes between multiple actors with different belief systems and interests (Leeuwis 2000), and this is also one of the cornerstones of innovation systems thinking (Hall *et al*. 2001). The many definitions of innovation systems coincide in their emphasis on multi-stakeholder networks for the creation, exchange, regulation, adaptation and use of knowledge for economic, environmental and social changes. What is important both in innovation systems thinking and 3rd generation KM models, is that the institutional dimension of knowledge sharing is important: explicit attention to institutions as formal 'rules of the game' and informal 'habits and practices', which not only govern the actual behaviour of innovation actors, but also are subject of change, seen from the perspective of 'duality of structure' (Giddens 1984), meaning that 'structural properties of social systems are both medium and outcome of the practices they recursively organize' (Giddens 2004, p. 25). Such institutions are hence a strong determinant, for example, of whether actors are able to share knowledge, what kind of knowledge is considered 'valid', how research agendas are set, but they also are concerned with the evolution in the 'knowledge systems' of actors themselves, i.e. if these are able to question their worldviews and visions and radically change these in order to enable and accommodate change.

While there appear to be thus clear similarities between the two approaches, a distinction of innovation systems approach from knowledge management approaches appears to be that knowledge creation and exchange is just one function of innovation management. As Smits (2002) states, innovation calls for an effective combination of 'hardware', 'software', and 'orgware'. Hardware relates to the material equipment required, and software concerns the knowledge in terms of manuals, software, digital content, tacit knowledge involved in the innovation. Orgware refers to the organisational and institutional conditions that influence the development of an invention into an innovation and the actual functioning of an innovation. Hence also other functions need to be fulfilled, such as fostering entrepreneurial activities, facilitating visioning and foresight processes, market formation, mobilising resources necessary for innovation, networking and capacity development, and creation of enabling environments for embedding of technology (Hekkert *et al*. 2007). Knowledge is thus one of the resources, besides innovative attitudes, funding, lobbying capacity, and material resources.

However, both approaches highlight the importance of having well-established linkages and information flows amongst different public and private actors, enabling institutional environment and incentives that enhance broad-based stakeholder collaboration, and well-developed human capital. This also points to the importance of, and puts requirements on, intermediary actors and mechanisms that aim to bring actors together. (Howells 2006, Klerkx *et al.* 2009).

This Special Issue aims to provide a critical view on similarities and differences between knowledge management and innovation management, particularly in the context of international development, in order to mutually reinforce the approaches and create a better understanding of how interaction and learning between heterogeneous actors can be improved.

The articles in this Special Issue

The articles display a wide range of foci on KM4D and IM4Dev, representing diverse geographical regions – three from Africa (Schut *et al*., Kilelu *et al*., Ngwenya and Hagmann),

two from South Asia (Pant and Pant, Sulaiman *et al*.) and one from South America (Horton *et al*.), and there are many interrelationships between the different articles. The articles address different components of knowledge and innovation management for development, such as financial resource mobilisation (Pant and Pant), local knowledge mobilisation to support innovation processes (Sulaiman *et al*., Ngwenya and Hagmann), the role of researchers in knowledge and innovation management (Schut *et al*.), agency of intermediary actors in innovation systems (Kilelu *et al*.) and intermediary actors' roles to facilitate innovation at the network and system levels (Horton *et al*.). Finally, a Community Note (Cummings *et al*.) describes a discussion on the KM4Dev community and makes a preliminary description of a development knowledge ecology.

The article by Pant and Pant focuses on the drivers behind formal knowledge production through scientific research, and analyses how the mechanisms in place to define research agendas and to govern the research process (e.g. the priority setting mechanisms, the contractual arrangements, grant administration modes and funding modalities) influence the type of research that is being done, and how this supports, or rather does not support, pro-poor development in smallholder agriculture. They do this by means of a longitudinal analysis of agricultural research grant administration procedures in Nepal. They conclude that a better differentiation is needed in research fund allocation modes in order to enable different kinds of research that serves different kinds of purposes (i.e. to satisfy scientific curiosity, to support development problem-solving, and to support innovation generation and small enterprise development).

The article by Sulaiman, Thummuru, Hall and Dijkman, looks at the role of tacit knowledge, namely the knowledge embedded in individual experience involving intangible factors such as beliefs, perspectives and value systems, and how this plays an essential role within innovation capacity. They present an analysis of a dairy enterprise in India which, due to its effective use of tacit knowledge, succeeded to become one of the major dairy enterprises, despite several uncertainties and adverse factors. They show that tacit knowledge is essential for the adaptive capacity to adequately respond to emerging challenges and possibilities, but that its effective employment depends on having a well-developed network with a broad set of stakeholders. They conclude that tacit knowledge sharing can be more important than making this knowledge explicit but that tacit knowledge sharing requires the development of mechanisms, such as reflection workshops with local communities and inter-divisional staff meetings. In other words, this article calls for a shift from knowledge management to learning and innovation management for international development as the latter can harness the tacit knowledge without necessarily relying on the conventional emphasis on codification, storage and transfer of local and indigenous knowledge.

Schut, Leeuwis, Van Paassen and Lerner analyse the debate on biofuel sustainability in Mozambique, and explore the role of researchers in knowledge and innovation management. Comparing the literatures from knowledge management and innovation management, they show that researchers as knowledge and innovation managers fulfil several roles in policy processes. They conclude that knowledge management here should be seen as a role within broader innovation management: knowledge management can provide the basis for engaging in more specific innovation management activities or roles (such as arranging funding, political lobbying), which may consequently contribute to creating an enabling environment for more effective knowledge management in policy processes. Researchers benefit in this process from both having deep knowledge of the problem at hand, which gives them credibility, but also having a relatively independent position in the eyes of stakeholders which helped them in forging networks, signalling problems in

relational and institutional dynamics, creating trust among stakeholders, and hence creating enabling conditions for the policy process to evolve.

In their article on knowledge management for pro-poor innovation, Horton, Thiele, Oros, Andrade-Piedra, Velasco, and Devaux focus on an integrated approach for enabling value chain innovation in potato chains in Bolivia and Peru. Taking the 3rd generation view on knowledge management as situated learning, they show how within the Papa Andina Programme, knowledge management has played an important role in sharing the different experiences in the several projects in the programme. Knowledge management has also enabled Papa Andina to act as an 'innovation broker', building linkages among several actors in the innovation system, and also making unusual combinations of actors. For example, they forge connections for direct collaboration between local communities and large for-profit companies in the value chain, which were uncommon. Often these unusual combinations prove most fruitful for innovation. While Papa Andina was quite successful in its approach, their integrated combination of knowledge management and innovation management and their role as an innovation broker was sometimes hard to grasp for the actors they dealt with, including their mother organization, the International Potato Research Institute (CIP).

Whereas several articles touch upon the role of intermediaries (in the form of actors and platforms) that bring several actors together for interactive and social learning and innovation, the article by Kilelu, Klerkx, Leeuwis, and Hall specifically focuses on this. They describe several perspectives on how the role of 'knowledge broker' is conceptualized, from a 'science push' focus of being a mere translator of scientific knowledge to different audiences (resembling 1st generation knowledge management) to a 'systemic innovation intermediary' which fulfil roles of the support of vision formulation, network composition, and innovation process management, in order for innovating actors to access the needed resources and engage in a productive innovation process. Taking the Kenyan agricultural sector as a case, focusing on the dairy and horticulture, and maize (staples) sub-sectors, Kilelu et al. map the intermediary fields in relation to innovation support in these sub-sectors, and distinguish four distinct types of intermediaries: systemic brokers, specialized technology brokers, enterprise development support intermediaries, and pro-poor input access intermediaries. While all levels within the innovation system (e.g. the micro level of farmers, the meso level of sub-sectors and their innovation agendas) are served by and connected through the different types of intermediaries, the article concludes that there needs to be more recognition and support for their important role in stimulating innovation, as the critical component of national innovation capacity.

To provide a practitioner's perspective grounded in two decades of hands-on experiences, the article by Ngwenya and Hagmann goes deeper into the problem solving and facilitation methods that an innovation process facilitator or innovation broker can employ. It shows that knowledge management tools form part of a broader repertoire of tools to enhance the adaptive capacity of innovation platforms or networks. This calls for identifying systemic blockages within systems, using them as a trigger to influence change in the whole system. The article contributes to building a set of methodologies that foster innovation using a broad innovation systems perspective, contributing to the yet few innovation systems facilitation toolkits that are available. However, as the article concludes, much of the innovation system facilitation skills themselves are tacit knowledge, so the 'tricks of the trade' cannot easily be conveyed on paper.

Cross-cutting observations

While the papers have different geographical scopes and highlight different aspects of KM4D and IM4Dev, they allow for a number of cross-cutting observations.

A first observation is that they show that knowledge management is a key function within innovation processes, as it supports the learning process among multiple actors (situated mutual learning), and often this is about tacit knowledge sharing. But knowledge management fits within and is supportive to a broader palette of functions and resources needed to spark innovation and to create a conducive environment for innovation. This shows for example from the articles of Sulaiman *et al*., Horton *et al*., Schut *et al*., and Ngwenya and Hagmann. The studies in this sense support the argument of Smits (2002) that the 'software' needs to be accompanied by 'orgware' development.

Secondly, the articles by Kilelu *et al*. and Horton *et al*. show that intermediaries who play a crucial role in bridging the several dialectical divides which may be present in innovation systems (such as flexible and rigid working styles, corporate interest and social responsibility, and public and private good nature of knowledge – Pant and Hambly Odame, 2006) go beyond stimulating situated mutual learning, and also enable connections to draw in other resources than knowledge to contribute to the innovation process and to creating an enabling environment.

A third and last cross-cutting observation is that researchers can act as both knowledge creators and innovation managers (Schut *et al*.) However, as this article shows and as also becomes particularly clear from the article by Pant and Pant, modes of delegation (namely how researchers are funded and what mandate they are given) are crucially important. In other words, in order to stimulate researchers to let their research more actively contribute to innovation, the right delegation mechanisms need to be in place. This connects with a key premise within innovation systems thinking on the importance of institutions which determine the conditions under which innovation can take place, or in KM4D terms, enable situated mutual learning.

Outlook

The goal of this Special Issue is to bring closer the perspectives of knowledge management and those of innovation management or innovation systems. As becomes clear from the several articles, the perspectives of KM4D and IM4Dev do not seem that far apart, and have arrived for example at a similar understanding of the importance and influence of the institutional context for learning and innovation. They are complementary, and could benefit from further integration. Given their explicit focus on knowledge management, KM4D perspectives can help better understand the knowledge sharing and learning process that is crucial to innovation, and which underlies many of the other functions crucial to innovation such as lobbying, and the creation of an enabling environment. IM4Dev perspectives, with their attention to other resources than knowledge needed to feed the innovation process and create an enabling environment, broaden the view on the settings in which knowledge management aims to make a contribution. We hope that this Special Issue spurs future work that connects both perspectives as they share similar views on the learning and cooperation processes needed for development.

Laurens Klerkx, Laxmi Prasad Pant, and Cees Leeuwis
Guest editors

Note

1. Throughout the journal, a distinction is made between the field of knowledge management for development (KM4D) and the Knowledge Management for Development (KM4Dev) community, found at www.km4dev.org, on which the journal is based.

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Editorial

It is with great pleasure that we are publishing this Special Issue: Beyond the conventional boundaries of knowledge management: navigating the emergent pathways of learning and innovation for international development. One of the objectives of the journal when it was started in 2005 was 'facilitating cross-fertilization between knowledge management and related fields' by acting as a 'broad church' (Ferguson and Cummings 2005). Indeed, one of the objectives was to bring the approaches of innovation management for development (IM4Dev) and knowledge management for development (KM4D) closer together so that they could better inform each other although, in the language that we had available to us in 2005, we called this agricultural knowledge systems rather than IM4Dev or innovation systems. To quote from one of the unpublished background documents ('Scope note for new journal proposal' 2005):

> It will aim to facilitate cross-fertilization between knowledge management and related fields: for example information management, but also with other development-related approaches: agricultural knowledge systems, soft systems research, and other relevant "traditions".

The rationale for bringing these two approaches closer together was that we thought at the time, intuitively, that KM4D with its roots in the private, non-development sector, could benefit from the insights of an approach which was grounded in development and which we had also identified as home-grown knowledge management. It is also fascinating to see how the different phases in IM4Dev correspond with those different generations of KM4D as you can read in the Editorial from this issue's Guest Editors.

One of the advantages of the IM4Dev approach is that it is focused outside organisations while one of the limitations of KM4D has been that, because it comes originally from the private sector, it was originally focused on knowledge inside organisations. Indeed, one of the original criticisms of knowledge-based aid from King (2000 cited in Kalseth and Cummings 2001, p. 163) is still, to some extent, valid:

> The agencies have not started with the dramatic knowledge deficits of the South, nor with the key question of how knowledge management could assist knowledge development in the South. A continuation along their current trajectory will arguably be counter-productive; it will make agencies more certain of what they themselves have learnt, and more enthusiastic that others should share their insights, once they have been systematised.

IM4Dev, and the approaches it encompasses will help us to counteract this tendency. We also hope that the Community Note in this issue on the development knowledge ecology will play a role on focusing attention of KM4D outside the internal functioning of organisations.

We would like to thank all the authors in this issue and also the colleagues who have reviewed the papers behind the scenes. Particular thanks are also due to the team of Guest Editors, Laurens Klerkx, Laxmi Prasad Pant, and Cees Leeuwis, for pulling together a very interesting Special Issue.

Finally, we would like to welcome two new members to the journal team. First, we would like to welcome Patrick Lambe to the Editorial Board of the journal. Patrick is the author of Organising Knowledge (Chandos 2007), an Adjunct Professor at the Hong Kong Polytechnic University and founder of KM consulting firm, Straits Knowledge. He blogs at www.greenchameleon.com. Second, we welcome Denise Senmartin as a new Senior Editor. She was previously a colleague at the International Institute for Communication and Development (IICD) and is currently undertaking a PhD at the Doctoral Programme on Information and Knowledge Society at the Internet Interdisciplinary Institute of the Open University of Catalonia, Spain. A warm welcome to you both.

Sarah Cummings, Ewen le Borgne, Ivan Kulis, Lucie Lamoureux and Denise Senmartin
Editors,
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