Knowledge Facts, Knowledge Fiction

Notes on the Role of ICT in Knowledge Management for Development

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Abstract

What happens when corporate knowledge management monoculture meets the diverse international development sector? This paper finds that development agencies have too readily adopted approaches from the Northern corporate sector that are inappropriate to development needs. These approaches treat knowledge as a rootless commodity, and information and communications technology as a key knowledge tool. Alternative approaches are required, that focus on the knower and on the context for creating and sharing knowledge. ICT tools need to support this approach, helping people develop appropriate or alternative scenarios and improving the accessibility of information and knowledge for people with different cultural, social, or educational backgrounds

1. Knowledge is Power[1]

The corporate slogans of the past years say it all: information is *out*, knowledge is *in*. Knowledge management (KM), an organisational management tool developed in the 1990s, is the latest trend in solutions to problems of managing private sector organisations in the industrialised North. The international development sector is adapting its language too. Development agencies now speak of "Knowledge Management for Development", they have a "Knowledge Bank" and are "mobilising knowledge resources".

The increasing focus on knowledge, reflected in such phrases as "knowledge society" and "knowledge economy", reflects a shift away from an earlier discourse about the "information society". This change in discourse has also affected international thinking about social and economic development. The development co-operation sector is beginning to recognise knowledge as a pillar of equitable and sustainable development and to view knowledge sharing as one of the central challenges for development practice (Bellanet, 2000b). As might be expected for a discourse that has originated in the private sector of the industrialised North, it has been the international development agencies that have been the first to introduce knowledge management strategies in their organisations. These strategies are based on a reading of corporate experiences with knowledge management.

Can knowledge management adapt to such a diverse environment as the development sector? Also, what is the role of information and communications technology (ICT) in knowledge management? ICT has established itself as an important tool for communication and information exchange between people working for development. But since knowledge is much more linked to our experiences, values, beliefs, and cultural practices, it is much less easily shared than information. Can ICT enable the documentation of knowledge and support the creation and sharing of knowledge in the same way as it does with information?

This paper is a practitioner's impression of the emerging debates around knowledge management for development and the role of ICT. It can only touch upon the many issues at stake, but will attempt to describe the implications of the transposition of corporate knowledge management techniques into knowledge sharing for development and, drawing on work by theorists in both sectors, try to elaborate an alternative understanding on the role of ICT in sharing and creating knowledge for development.

[1] A quote, translated from the Latin, by Sir Francis Bacon (1561-1626). That knowledge is power, or imparts power, is especially true when that knowledge is the exclusive property of a few. Some of the knowledge most critical to development is corporate, patented knowledge such as drugs to fight HIV/AIDS or seeds offering better yields.

2. Understanding Knowledge and Knowledge Management

Knowledge management is about improving knowledge sharing within an organisation in order to create new knowledge that will enable the organisation to learn and innovate. KM became the new corporate trend in the second half of the 1990s as a response to several developments in the private sector. At the end of a decade of downsizing and re-engineering, companies began to realise that the lay-offs and departures of their employees had also removed valuable, undocumented knowledge and experience.

Knowledge management theory distinguishes between information and knowledge:

Information	Knowledge
is independent, more-or-less self-sufficient	usually entails a knower
is easy to detach and transfer	is harder to detach and transfer
is something we hold	is something we digest

Table 1: Information and knowledge (based on Brown and Duguid, 2000)

Knowledge management views information as something that is self-contained and that can be stored in a digital format on computers. Hence there is a focus on information technology for searching, changing and retrieving information. However, unlike information, the management of knowledge should require a focus on the 'knower', the person who creates and carries knowledge. The sharing of knowledge is more difficult than the sharing of information because knowledge is located with, or is possessed by, a knower.[2] This is especially true in dealing with tacit knowledge:

Tacit knowledge	Explicit knowledge
based on experience and expertise, reflects ways of doing	based on policies, procedures, instructions,

[2] An unintended consequence of knowledge management practice has been to alert people to the fact that their knowledge has become a resource to which others, often those with more power, attach a value. Increasingly, corporations and their employees are realising that, in a market based setting, knowledge can be a commodity. In Europe, IBM gives away cash awards to employees who create knowledge documents that other people in the organisation use. Other companies use a point system or "intellectual capital units" which can be redeemed for vacation days, gadgets like Palm Pilots or a larger office cubicle (Globe & Mail, 2001).

things, sense making	standards, results
personal / individual	part of an organisation / social
rarely documented	often well-documented
held within us, difficult to share	held within organisations, easy to share
access enabled through "person-to-person and connect approach"	access enabled through "collection and codification approach"

Table 2: Tacit and explicit knowledge (Based on Bellanet, 2000b; Lindsey-King, 2000)

Knowledge or Knower?

It is possible to distinguish two approaches to knowledge management. The first is a *knowledge-centred* approach where knowledge management practices focus on the collection and codification of knowledge: the capturing of knowledge in formats that can easily be stored and retrieved. In a knowledge-centred approach, KM depends heavily on information systems such as databases, expert systems, corporate portals[3], digital directories, navigators and other information technology solutions. The success of managing this knowledge depends heavily on applications of ICT that "facilitate an effective architecture, bringing appropriate knowledge to the point of action during the moment of need" (Morey, 1998).

To this end, the corporate approach to KM has typically deployed a range of technical solutions:

- Email and mailing lists are the most commonly used tools for collaboration. They are low cost, easy to use, widely available, and compatible across different software platforms. Detailed information about participants – descriptions of their organisations, position, skills, interests, and even a picture – can help create an effective environment for collaboration.

- Groupware offers participants a set of online tools for collaboration such as a whiteboard, authoring tool, conferencing tool (voice/video), database, email and chat. The groupware can be used in one organisation – each participant accesses the workspace via the local area network (LAN) – or can be used by a distributed group of people.

- Codification tools are used to manage knowledge, to make explicit knowledge accessible. Codification tools try to bring together and organise information and knowledge in one place and make it accessible. ICT-based codification tools connect people with files. A LAN is a widely used technology to access codification

[3] The corporate portal was selected as the defining KM application and the number one KM trend at the turn of the century (Silverstone and Karlenzig, 1999).

tools such as the organisation's intranet, extranet, portal, database or document management system. Knowledge generator software is aimed at enabling the acquisition, synthesis, and creation of knowledge for codification; knowledge maps can help people locate codified knowledge resources.

Thus, while knowledge management theory appears to revolve around a focus on people, its corporate practice remains firmly rooted in applications of information and communication technology (Brown and Duguid, 2000). Knowledge-centred KM tries to capture the 'know-what', the explicit knowledge, and to deliver it with just-in-time efficiency. However, it does not capture or deliver tacit knowledge, or 'know-how'. Tacit knowledge is difficult to codify and to make accessible to others. As opposed to being 'captured and delivered', tacit knowledge can only be learned.

Second-generation KM – the alternative approach – is *knower-centred*; it perceives knowledge as a human resource and it recognises that while explicit knowledge may be manageable, tacit knowledge can be – at best – shared only through practice. It is informed by research on Japanese management styles, which showed that every worker holds important knowledge about how things get done in practice (Nonaka and Takeuchi, 1995). This tacit knowledge is too diffuse and intuitive to write down or codify in a computer-based system but it is more important to the long-term success of the corporation than all the data in the corporate database (Kleiner, n.d.).

Similar work by Jean Lave and Etienne Wenger analysed how know-how was shared among workers in large organisations (Lave and Wenger, 1991; Wenger, 1998a). Lave and Wenger showed that all this critical know-how is shared largely in informal exchanges between people, such as conversations around the water cooler and meetings during coffee or lunch breaks. These exchanges allow people to build relationship of trust. The combination of this trust, and a passionate or invested interest in practice, form the foundation for a successful connection between the 'knowers', and create a supportive environment for knowledge sharing, a phenomenon they termed 'communities of practice' (Hildreth et al, 2000; Hildreth et al, 1999; Wenger, 1998a).

More recent research based on this approach shows the importance of providing an enabling environment for the creation of knowledge, the process of making tacit knowledge explicit. Some of the techniques – which often have little to do with ICT tools – are the management of conversations (Krogh et al., 2000) and storytelling (Bellanet, 2001). Both constitute a process that moves from sharing tacit knowledge to creating new explicit knowledge.

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The two approaches to KM can be understood as two extremes on a continuum, with a pure ICT-driven, knowledge-centred approach on the one end and a pure human, knower-centred approach on the other. In theory, corporate KM could be seen as an attempt to combine the two approaches: to maintain a flexible workforce, corporations need to be able to identify their 'dispensable' workers and extract 'knowledge' from them; and in order to get at or stay at 'the cutting edge', they need to mobilise all 'indispensable' knowledge resources available towards innovation. In short, corporate KM could be about seeking ways to extract, codify and deploy knowledge, be it explicit

or tacit knowledge. In practice, it has often tended towards the knowledge-/ICT-centred end of the continuum.

Under corporate KM, knowledge is measurable. Knowledge management is about extracting and documenting knowledge so it can be measured, standardised for certification, sale or acquisition. Not unlike a commodity, if knowledge cannot be measured and certified, it is of no value or it is too expensive to manage or market (Kleiner, n.d.; Menzies, 1996).

In seeking to detach knowledge from the knower, corporate KM creates what the literature on learning might call "a separation between knowing and doing, treating knowledge as an integral, self-sufficient substance, theoretically independent of the situations in which it is learned and used" (Brown et al, 1989). Knowing is a human act, not merely an organisational practice. People preserve the tacit aspects of knowledge that formal systems cannot capture. Tacit knowledge made explicit is stripped of its 'face' and 'voice' and turned into information (Weinberger, 1998). By defining knowledge as an object which can be separated from the knower, KM is based on rather traditional Western assumptions. In this sense, it is possible to discern in KM an approach based not only on a traditional Western understanding of knowledge, but one which is structured to meet the demands of private sector organisations, with assumptions, priorities, and goals about creating efficiencies, maximising profits, and ensuring shareholder satisfaction.

In contrast to this approach, the second generation concept of 'situated knowledge' assumes the identification of tacit knowledge *and* the knower: knowledge separated from the knower is diminished and incomplete. In commercial terms, such knowledge is 'value-subtracted'. "(S)ituated knowledge is a knowledge that is accountable to the knower. It is a knowledge that acknowledges being located in time and space" (Parajuli, 1991). Thus, the practice shared in Lave and Wenger's communities of practice is in the same way situated in time and space (Wenger, 1998a). It is in this practice that knowledge is acquired and that learning takes place.

Situated knowledge is contextualised knowledge. Although corporate KM theory has in-depth analyses of the situations that facilitate the sharing of knowledge, the gender, race, class or culture of the 'holder' of the knowledge is not included in that analysis. Nor is there a discussion of how these factors influence how people value, share, use, create, or interpret knowledge. In the private sector these are typically seen as largely irrelevant, unless as factors affecting marketing opportunities.

Learning as a Social System

Underpinning these discussions of knowledge is the concept of learning. Learning is the acquisition of knowledge through reflection, understanding, and practice.

Etienne Wenger's approach to learning is based on the premise that engagement in social practice is the fundamental process by which we learn and so become who we are. In his research Wenger shows that communities of practice are an organisation's most versatile and dynamic knowledge resource and that they form the basis of an organisation's ability to know and learn (see Box 1).

Box 1: Communities of Practice

Wenger identifies four main functions of communities of practice with respect to the creation, accumulation, and diffusion of knowledge:

- They are nodes for the exchange and interpretation of information.
- They can retain knowledge in "living" ways, unlike a database or a manual.
- They can steward competencies to keep the organisation at the cutting edge.
- They provide homes for identities.

(Wenger, 1998b)

In knowledge management, learning is intended to bring new knowledge to the organisation, allowing people to create new and better results; in other words, to innovate. However, most corporate learning results in adaptive learning. Adaptive learning seeks out the best practice but does not interrogate the assumptions of that practice (Webber, 1999). Once a best practice is identified, the role of KM is often reduced to delivering that knowledge to the right place at the right time.

In seeking to promote the sharing and creation of knowledge, organisations need to focus on what Chris Argyris termed generative learning or "double-loop learning". Generative learning, 'learning that enhances our capacity to create', is essential for knowledge creation as it promotes the questioning of the premises on which we take action, even if these premises are considered best practice (Senge, 1990).

3. Knowledge Management and Development

Private sector KM strategies first interacted with development via international development agencies based in the industrialised North. The World Bank played an important role in introducing knowledge strategies to the development sector through such initiatives as the Global Knowledge Partnership and the Global Development Gateway.[4] Two "Knowledge Management for Development" conferences in Washington in 1999 and in London in 2000 brought together representatives of governments, international development agencies, corporations, and organisational management consultants (Bellanet, 2000a; Bellanet, 2000b). But should corporate KM

[4] See the following web sites: http://www.globalknowledge.org and http://www.developmentgateway.org

be introduced to international development with its assumptions unchallenged? How appropriate is this KM for the development practice?

The assumption that knowledge can be transformed into a commodity has entered the knowledge debate in the development sector. However, as the KM discourse and methodologies expand to include the international development sector, significant problems of adaptation arise. In the recent *World Development Report: Knowledge for Development 1998/1999*, the World Bank outlines its role as a knowledge broker, transferring knowledge from one place where it is available to the place where it is needed (World Bank, 1998). As critics have pointed out, this approach draws from the knowledge-centred ideas outlined above, and perceives knowledge application as a largely definable, objective, linear process (Panos, 1998).

However, as noted above in relation to knowers and knowledge, knowledge application rarely works that way. Knowledge is not evaluated or accepted only on the basis of its problem-solving or innovating power:

"A Nepali child in a remote hamlet in the Himalayas is dehydrated by diarrhoea, but his young mother is brought up to believe that under no circumstances should water be given to her child. Information countering this belief is contained in posters at rural health centres, and is broadcast over Radio Nepal every day, but the knowledge has not reached her" (Panos, 1998).

The government's knowledge about how to deal with diarrhoea will reach the mother as information. She will interpret and evaluate that information and accept it or not. In other words, how people will actually use information, integrate it in their knowledge, is more a function of people's capacities, opportunities, education, experiences, senses, values and intuition, than of the information that reaches them. The availability of information or knowledge alone does not change behaviour.

In addition, knowledge is also evaluated on its ownership and affiliations. In the corporate sector this may be less of an issue since the 'holders' of knowledge, the knowledge creators, and the recipients of knowledge frequently work together in the same organisation, within the same corporate culture and with shared goals. The World Bank's Global Development Gateway, the 'premier web entry point for information about poverty and sustainable development' is perceived by many civil society organisations as a replica of the corporate portal: the world as an organisation with one global culture and common objectives (Mutume, 2000). The critique of the Bank's approach in this case indicates that knowledge needs to be presented in the appropriate context and be meaningful in the local situation in order to be useful and effective.

In corporate knowledge management practice the different knowledges merge into the one best practice that best serves the corporate strategy. In the diverse and politicised development sector, a multitude of 'knowledges' exist such as men's and women's knowledges, local[5] and expert knowledge, individual and social knowledge,

[5] Local or indigenous knowledge is the knowledge generated by communities, over time, allowing them to understand and cope with their particular agroecological and socio-economic environment (Appleton et al, 1995).

endogenous and exogenous knowledge. The World Bank's approach to knowledge obscures "the plurality of alternative and legitimate knowledge" (Mahiri, 1998), and obsures the role of the knower and of the knower's social system.

ICT and Knowledge for Development

The growing network of information highways that is dedicated to moving information across large distances as fast as possible, largely for commercial purposes, provides access to ICT-based information and knowledge. As noted above, the knowledge-centred approach sees a key role for information and communication technology. From this perspective, communication across the new networks is seen as a form of transportation: communication as product delivery, not a social or cultural process. This network is developed to support the global economy, not strengthen communities:

"(…) *it provides cheap, fast, long-distance communication that will strengthen the relations between centres and margins while weakening everything in between; it supports centralised decision-making and authority while decentralising 'location', i.e. work; it will go further and faster while saying less about more*" (Menzies, 1996).[6]

The development sector was one of the first non-commercial sectors to adopt information and communication technology in support of networking and information exchange. But after 10 years of network building, access and participation are still major obstacles and the appropriateness of ICT projects for the sector's policy priority - poverty alleviation - is questionable (Heeks, 1999). Although organic information systems and indigenous knowledge provide the best communication channel and best information source for the poor (Heeks, 1999), poor countries are more and more affected by developments on a global level and are constantly forced to adjust to global communications.

It has been assumed that as long as the development sector recognises the biases in corporate, ICT-based approaches, and seeks to adapt its usage based on local needs and circumstances, negative impacts can be reduced (Ballantyne et al, 2000; Menzies, 1996). But the adaptation of the usage of existing tools will not challenge the assumptions on which available ICT-based KM tools are developed and applied. What is needed is the development of a more knower-centred approach and of ICT tools that support knower-centred creation and sharing of knowledge.

One such example is described in Box 2. Other examples include knowledge bases that not only store knowledge for a community of practice, but also capture the context in which the knowledge is produced and used. These form a collection of many types of information and knowledge such as factual data, comments, anecdotes, experiences, lessons-learned, questions–and-answers, manuals and other types of information for decision-making. They are, in a sense, a complex database. A similar example would be a weblog – a personal knowledge base, usually maintained by an

[6] Manuel Castells (1996) argues that being disconnected from the network is the equivalent of non-existence. The position in the network decides a country's or region's material conditions of existence.

individual such as a development practitioner, constantly updated with new information, personal experiences, analysis, hyperlinks and commentary.

Box 2: freeText[7]

An example of an ICT-based tool in support of sharing and creating knowledge for development is freeText, a simple platform-independent, web-based document authoring and review tool. It was developed to allow a diverse and large group of researchers and practitioners in the field of gender and conflict to collaborate on post-conference report writing. The use of freeText allowed:

- continuation of the interaction and learning that was established during face-to-face conferencing;
- an open review process with maximum intervention by all participants, allowing them to see or discuss other people's comments and editorial changes. This completely changed the authoring and review process, which is usually led by one of the resource-rich organisations in the North, providing only a limited commenting and editing process by fax or email;
- officials of local and international organisations and governments to watch how the text developed, thus improving the likelihood that they would actually use its recommendations.

Such an approach would encourage new ICT tools with a design and application that acknowledge and incorporate:

a) the social context in which these tools will be used (de Moor and Kleef, 2001) ;

b) the limits of these tools in order to prevent a narrowing of goals of what actually can be achieved in supporting the sharing and creation of knowledge for development (Laursen, 1991); and

c) the perceptions and priorities of the people who own and use the knowledge (Appleton et al, 1995).

ICT-based tools in support of the sharing and creation of knowledge for development need to favour flexible networks over hierarchical portals; holistic knowledge systems over exclusive expert systems; and the diversity of knowledge over the monoculture of the best practice. They should strengthen the diversity of knowledge by preserving its

[7] freeText is open source software developed by Rolf Kleef and Maja van der Velden for the Programme of International Co-operation and Conflict Resolution (PICCR) of the Fafo Institute for Applied Social Science, Oslo, Norway. A demo version of the tool is available at http://www.drostan.org/projects/fafo/

many 'faces and voices' instead of invalidating knowledge by stripping it of its gender, class, and ethnicity in order to create information that fits all.

More specifically, then, ICT in support of knowledge for development should offer tools:

- to compare data, information, and knowledge;
- to develop alternative scenarios;
- that support online communities of practice;
- that help make information and knowledge accessible based on people's social, cultural and educational background (incorporating language translation, social translation, and formatting tools); and
- that help people to present their information and knowledge in appropriate and effective ways.

4. Conclusions

As described above, the development sector has been introduced to a theoretical world in which information is out and knowledge is in. Unfortunately, the Western corporatist approach to knowledge management, aspects of which may be useful in theory, is inappropriate for much international development practice. Development practitioners should therefore guard against the tendency to adopt the logic of corporate KM in the practices and mechanisms being developed to share knowledge and facilitate knowledge creation in the development sector. The critique outlined above indicates that the sharing and creation of knowledge for development should be based on generative learning and on an understanding of learning and knowledge as situated.

In the development sector gender, race, class, and culture are – or should be – basic considerations in making public policy and providing international assistance. Thus the development processes in which knowledge is shared, created, and used, and the tools and techniques that support these processes, need to acknowledge and incorporate the diversity of knowers and knowledge including the ways gender, race, class, and culture influence the interpretation, acceptance, and integration of knowledge by the participants in these processes.

Knowledge strategies should be developed in the specific situations in which this knowledge is created, accessed, and used. Mahiri's concept of knowledge integration, based on the mutual interdependence of expert and indigenous knowledge, or global and local knowledge, should guide global initiatives for knowledge sharing. The challenge is to find the appropriate ways to maintain the integrity, creation, and accessibility of the different knowledges, while at the same time to develop distribution

systems to facilitate knowledge sharing among people with knowledge. Small, independent development projects will need to focus on local, situated knowledge, which is best shared through learning in practice, using local organic communication systems and locally accessible knowledge systems. Large-scale projects need to focus on the integration of local and expert knowledge (Mahiri, 1998), using tools and techniques that create an enabling environment for people to share and create knowledge (Drucker, 1994; McDermott, 1999; Wenger, 1998b).

The sharing of knowledge for development implies specific responsibilities. Elisabeth Reid refers to the "epistemic responsibility" of people and organisations presenting knowledge:

"Epistemic responsibility is marked by an openness to the acquisition of knowledge and a certain kind of orientation to the world and to one's knowledge-seeking self within it. Certain kinds of knowledge are contingent on experience which itself is mediated by the gender, ethnicity, class, academic discipline and geographic location of the experiencer. The value of what is known is dependent upon the alternatives or perspectives considered. If assumptions have not been questioned and alternative sources of knowledge sought, then the knowledge can be faulted. Claims to knowledge cannot only be verified. The claimant can be faulted for not having looked enough, for the way he or she comes to knowledge (Reid, 1992)."

Above all, the development sector needs learning processes appropriate for the specific social, cultural, and organisational circumstances. We should avoid the slavish replication of the learning processes used in the industrialised North (Credé and Mansell, 1998; Reid, 1992). Only generative learning, learning that improves the capacity to create, leads to appropriate and sustainable knowledge creation.

Can knowledge management and its ICT tools improve the sharing and creation of knowledge for development *among* people, organisations and communities? As noted above, the premises on which corporate sector knowledge management has established itself are not appropriate for the development sector. In fact, the logic of knowledge management may do more harm than good. This danger is aggravated by an ICT infrastructure based on a model that supports distance, centralisation and uniformity. The development sector needs ICT tools that help to address local needs, support decentralisation of authority, build transparency and understanding, and strengthen the diversity, ownership, and validation of knowledge.

If ICT-based tools are introduced for the creation and sharing of knowledge, they should be selected and used with great care. The social context in which they will be used should guide their design and application and they should not replace but build on face-to-face meetings in which people can establish the trust and relationships needed to share knowledge. The owners and users of the knowledge should manage these tools, not the people and organisations that have the power or resources to exploit the knowledge.

Corporate knowledge management is about detaching knowledge from the knower, about the centre controlling the flow of knowledge, ignoring what is not in its interest. The introduction of corporate KM in the development sector will replicate the corporate logic, spreading the fiction of knowledge as a commodity, a thing that can be stored and retrieved just as information. The development sector needs a new

approach to both ICT and knowledge for development. Knowledge for development is shared through learning, in practice, in communities with a common passion or interest. ICT's role in development should be about supporting the sharing, creation, integration, and validation of the different knowledges in order to empower knowers and in order to build and maintain sustainable communities and economies.

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