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ICTs and Changing Processes of Knowing in a Global Development Agency

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Geoff Walsham and Michael Barrett

Abstract

This paper is concerned with changing processes of knowing in contemporary organizations, supported in part by information and communication technologies (ICTs). A new conceptual framework is developed, drawing and synthesising from previous work in the knowing-in-practice literature. This conceptual approach is illustrated through a longitudinal, interpretive case study of a globally-dispersed organization. Particular emphasis in this paper is placed on the context of power relations within which knowledge-based initiatives and actions take place. Insights from the conceptual approach are generated on changing individuals, organizational structures and culture. It is argued that the conceptual framework has value for research on ICTs and processes of knowing in any global organization.

Keywords: knowledge, processes of knowing, knowledge management, ICTs, interpretive case study, global organizations, power relations

INTRODUCTION

Knowledge and knowledge management have been fashionable topics in contemporary organizations for over a decade now, and this has been reflected in the large academic literature focused on knowledge, including special issues of journals (Gherardi 2000; Grandori and Kogut 2002; Argote et al. 2003). Despite this massive interest, there is no agreed way of how to conceptualise knowledge, nor how to 'manage' it, with many different schools of thought and approaches. Writers such as Nonaka (1994) have been influential in the management literature with concepts such as the knowledge spiral, but others have argued that such work oversimplifies the nature of knowledge and misrepresents the philosophical ideas from which it is derived (Tsoukas 2003).

Despite the diversity of views, everyone agrees that knowledge is important to the organizations and societies of the early 21st Century. In addition, most people agree that information and communication technologies (ICTs) have a role to play in supporting efforts to generate and share knowledge; but we know that technology is not sufficient in itself (McDermott 1999), and that some combination of behavioural and technological approaches is needed (Barrett et al 2004). Here again, however, the literature offers a very wide range of approaches to the design and development of appropriate 'knowledge management systems', based on different perspectives on the nature of knowledge (Alavi and Leidner 2001).

In this paper, our primary intention is not to immerse ourselves in the debates concerning conflicting views of knowledge, important though they may be. Rather, we will articulate our own view of knowledge, and its support through ICTs, falling broadly within the knowing-in-practice school (Gherardi 2000, Orlikowski 2002). We will illustrate and develop our conceptual framework through a case study of a global development agency working in the health sector. Desouza and Evaristo (2003) argued that the literature addressing the management of knowledge in a global context is 'best described as sparse'. A related point is made by Orlikowski (2002) who noted that 'little is known about the process of knowing in complex organizations that are also geographically distributed'. Our case study will offer empirical evidence addressed to both of these shortfalls in the literature, being concerned with the management of knowledge in a complex, globally-distributed organization.

The rest of the paper is organized as follows. In the next section, we draw on relevant literature to put forward some fundamental positions on knowledge and practice. We then use these ideas as a basis to develop a conceptual framework for the analysis of changing processes of knowing. Next, we describe the methodology for our empirical case study. The main case study sections follow this, providing firstly a broad overview of the shifting goals and nature of the global development agency, and then a detailed analysis of changing processes of knowing in the agency. Finally, in the discussion and conclusions sections, we consider the contribution of our paper, and its broader implications for the study of ICTs and knowledge in complex global organizations.

KNOWING-IN-PRACTICE

In this section, we put forward some building blocks or fundamental positions on knowledge and practice. Firstly, we start from the view that *knowledgeability is individual and based on tacit knowledge, which cannot be converted to explicit knowledge*. The philosopher Polanyi (1966, 1969) is widely cited in the literature for his development of the concept of 'tacit knowledge'. However, as noted by careful readers of Polanyi's work (Tsoukas and Vladimirou 2001, Walsham 2001, Tsoukas 2003), tacit knowing on the part of an individual cannot be 'converted' into explicit knowledge, contradicting the approach of Nonaka, and followers in the management literature who claim to draw on Polanyi's ideas. Let us look at what Polanyi himself had to say on knowing through 'tacit power', or how human beings perceive the world through an active shaping of experience:

> 'I shall reconsider human knowledge by starting from the fact that *we can know more than we can tell.* (p4) … the outcome of an (individual's) active shaping of experience performed in the pursuit of knowledge. This shaping or integrating I hold to be the great and indisputable tacit power by which all knowledge is discovered and, once discovered, is held to be true.' (p6)

This tacit power produces the deep tacit knowledge that we have about the world in which we live, and this power is different for each individual due to our different initial dispositions and

experiences. Polanyi commented in a later work on the nature of 'explicit knowledge', such as the contents of books for example. He is clear that there is no objective explicit knowledge independent of the individual's tacit knowing:

> 'The ideal of a strictly explicit knowledge is indeed self-contradictory; deprived of their tacit coefficients, all spoken words, all formulae, all maps and graphs, are strictly meaningless. An exact mathematical theory means nothing unless we recognise an inexact non-mathematical knowledge on which it bears and a person whose judgement upholds this bearing.' (1969, p195).

What have these philosophical reflections to offer on the practical subject of the use of ICTs for knowledge management? They are highly relevant. All databases, on-line data sources, or the contents of e-mails, are 'explicit knowledge', which should not be confused with the much deeper tacit knowing of individuals which created them in the first place. And will they be meaningful and helpful to others accessing them? This will depend on whether they connect well to the tacit knowing of the user, and offer something new or interesting to this person.

We will return to this issue of 'knowledge sharing' a little later in this section. Let us move now to our second building block on knowledge, namely that *knowledge and practice are inseparable*. Polanyi's work would support this argument, but we can also point to a significant body of literature in the organizational field which supports this view. For example, whilst the main focus of Wenger (1998) is on groups through the notion of communities of practice, his ideas are based on a theory of individual practice-based knowing, learning, and identity-formation. Similarly, Orlikowski (2002) sees knowledge as enacted in people's practice on an ongoing basis:

> 'It leads us to understand knowledge and practice as reciprocally constitutive, so that it does not make sense to talk about either knowledge or practice without the other … a perspective that focuses on the knowledgeability of action, that is on *knowing* (a verb connoting action, doing, practice) rather than *knowledge* (a noun connoting elements, facts, processes, dispositions). (pp250-1)

Our third fundamental position is that *participation in knowledge communities is a key way in which to learn.* This argument has been well-articulated by Lave and Wenger (1991) and Wenger (1998) in their work on communities of practice, an approach which has received a wide following in the organizational and management literatures. We use the broader term 'knowledge communities' here for two reasons. Firstly, there is some ambiguity in the term communities of practice, even as articulated by one of the original authors. Wenger (1998) sees them as including salaried work groups such as the medical claims processors who form the empirical basis for his book. In contrast, Wenger and Snyder (2000) see them as self-selected or voluntary groups. Apart from this definitional issue, the term community of practice often has a connotation of unity of purpose and consensus. In this paper, we prefer the broader term knowledge communities, in order to offer the possibility for dissensus and conflict.

Despite the above qualification, we support Wenger's view that the exercise of individual knowledgeability, and related individual learning, often takes place within groups with whom individuals interact on an ongoing basis. This can be linked back to the earlier discussion of tacit knowing through the following quote from Tsoukas (2003):

> 'Tacit knowing cannot be "captured", "translated", or "converted", but only displayed and manifested in what we do. New knowledge comes about not when the tacit becomes explicit, but when our skilled performance is punctuated in new ways through social interaction' (p410).

So, people exercise their own, unique tacit power in interaction, but they learn from others through this interaction. This is not the same as 'sharing knowledge' if this is seen in a simplistic way as two people having identical views. Polanyi (1969) developed his ideas in this area of 'sharing knowledge' through the notions of sense-giving and sense-reading. Sense-giving attempts on the part of person A, through an e-mail or a contribution to an on-line discussion database for example, are not the same as the sense-reading by Person B who receives the message or reads the contribution. However, although two people always differ in the precise way in which they perceive an event or situation, both can nevertheless learn from interaction.

The final building block in this section is that *knowing-in-practice needs to be contextually situated, including contexts of power relations.* Lave and Wenger (1991) made this point clearly, although they did not develop the implications of their emphasis on the importance of power relations as a context for knowing-in-practice and learning. Contu and Willmott (2003) argued that the radical view put forward by Lave and Wenger has, however, been hi-jacked to a large extent by managerialist interpreters such as Brown and Duguid, who see only consensus within communities and implicitly support managerial-control agendas:

> 'Brown and Duguid (1991) … adopt and disseminate the more conservative aspects of situated learning theory. In particular, they embrace the idea of 'communities of practice' …. (but) Challenging and innovative elements of situated learning theory, such as the idea that learning practices are shaped, enabled and constrained within relations of power, are dimly recognised or discarded.' (p284)

Wenger (1998) displays some ambivalence on this issue himself. He states clearly that dissensus can be present in communities:

> 'Peace, happiness, and harmony are therefore not necessary properties of a community of practice' (p77).

However, he does not develop this line of analysis in the book, nor in his later contributions (e.g. Wenger and Snyder 2000). Yet, the empirical example of the medical claims processors in the 1998 book makes clear that they were severely disenchanted with management's control agendas, so much so that this opposition to management was a key focal point in their identity as a community. Wenger (1998) therefore provides an excellent example of Contu and Willmott's (2003) argument of the importance of the context of power relations for learning in knowledge communities but, ironically, neither piece of work makes any explicit theoretical use of this.

A CONCEPTUAL FRAMEWORK

A summary of the positions of the last section is to say that we view knowing-in-practice as an individual process, inseparable from practical action, with knowledge communities as key learning arenas, and taking place in contexts where power relations matter. We described the positions as building blocks and, to pursue the building analogy, a house is more than some building blocks. In this section, we remain consistent with our basic positions, but we develop a more detailed conceptual framework which will be used to analyse the case study later in the paper. A summary of the key elements of the framework is given in Table 1.

Table 1 Changing Processes of Knowing in Context

Contextual Elements Drawn on in Knowing-in-Practice	Level of Planned Intervention	Broad Conditioning Influences
Embrained – mental potential/conceptual thinking	Individual	Changes in individual's knowing-in-practice will be influenced by encoded elements of context – written, symbolic forms
Embodied – ways of acting	Individual	
Embedded – organizational structures and processes	Group or organization	ICTs have a major role to play in the creation, storage, transmission and use of encoded materials, and in facilitating faster, more extensive communications between people
Encultured – expectations about the culture of the group or organization	Group or organization	Organizational politics and power relations influence individual's knowing-in-practice

We start with Blackler's (1995) classification of knowledge types as embrained, embodied, embedded, encultured, and encoded. The first two of these relate directly to the individual, being concerned with latent mental potential, and ways of acting based on historically

developed filters and routines. Embedded refers to organizational alignments such as organizational structures and processes. Encultured knowledge was defined by Blackler as expectations about the likely intentions of others within a 'culture' or group. Finally, encoded concerns explicit, symbolic forms.

At first sight, this list seems to move away from our view of knowing-in-practice as an individual process, since it contains embedded and encultured elements which clearly affect the whole organization. However, we follow Thompson and Walsham's (2004) reinterpretation of Blackler's categories as contextual elements that are drawn on by an individual in each instant of practice. So, encultured and embedded knowledge are not components which are 'shared' by everyone in the same way, but rather are common contextual dimensions which are individually interpreted by individuals. These interpretations may have some similarities, but are never exactly the same, since the tacit power of interpretation of an individual remains unique to himself or herself. There is no such thing as 'shared' meaning in any absolute sense (Boland 1996).

Similarly, encoded forms of 'knowledge' can be shared, in the sense that the same material can be looked at by many people, but their individual interpretation of the meaning of the symbolic material will be unique. The encoded forms are 'explicit knowledge' in Polanyi's terms and, as discussed in the previous section, are strictly meaningless until interpreted by an individual through their tacit power. In our conceptual scheme, we consider encoded elements of written, symbolic forms as being broad conditioning influences on all the other contextual elements. For example, individuals may influence their conceptual thinking or action through e-learning systems or reading best practice descriptions. New workflow systems will affect embedded organizational processes, and web sites may affect cultural expectations on the perceived nature of the organization.

This brings us directly to the role of ICTs in changing process of knowing, as the above examples illustrate. We regard ICTs as broad conditioning influences also, but in a way that differs from many authors in the literature. Alavi and Leidner (2001) draw extensively on the IS literature to describe many specific ICT applications related to the creation, storage, transmission and use of 'knowledge'. These include data mining, e-learning tools, electronic bulletin boards, 'knowledge' repositories, databases, discussion forums, and expert systems.

(see table 3, p125). However, in this paper, we view these as tools to deal with encoded materials, *not knowledge*. How they affect knowledge, namely a person's knowing-in-practice, is related to that individual's deep tacit knowledge.

So, ICTs have a major role in facilitating the more effective creation, storage, transmission, and use of encoded materials. They are also crucial in our contemporary world in facilitating faster, more extensive communications between people. However, in both cases, this does not necessarily imply better use of encoded materials or better communication. In order to address these latter issues, we need to consider organizational goals and whether they are achieved through the use of the ICT-based applications. We also need to consider different views of organizational goals, since what is considered a success by one individual or group may be considered a failure by others. This brings us to the last broad conditioning influence of our conceptual framework, namely organizational politics and power relations. As we discussed in the previous section, consideration of these is a crucial and relatively neglected area in the literature on knowledge management. The political context influences all individuals' knowing-in-practice, as we will illustrate later through our case study.

Although a key focus of our framework is on individual knowing, organizations normally attempt to intervene in these processes through planned intervention, and these interventions need to take place at different levels. Attempting to change the embrained or embodied aspects of an individual implies the taking of action at the level of that individual, for example through a new training scheme. Attempting to change the embedded features of context, such as organizational structures and processes, however, implies interventions structured at the group or organization level. This will affect all members of the group or organization, but in different ways. Similarly, trying to achieve the subtle attitudinal change associated with culture is a group or organization level intervention, with variable affects, good or bad, across all members at that level. We will look at some planned interventions in our case study, and trace how they played out in practice.

METHODOLOGY

The work described in this paper formed part of a larger research project concerned with 'ICTs and knowledge communities in global organizations'. The broad objectives of the project were to study knowledge practices in organizations with a global spread, to theorise these empirical observations, and to draw conclusions for both academic and practitioner communities. We carried out substantial empirical research in three organizations. In this paper, we report on the results from one of these organizations, which we will call the Global Development Agency (GDA).

The GDA was structured with a headquarters in a European country, regional offices in the main regions of the world such as Africa, Asia and Latin America, and country offices in most countries of the world. Our research was particularly concerned with the work of the country offices. However, although this level was the key focus, the role of the central headquarters and regional offices were important to what was happening at country level. So, in this paper, the focal level of analysis is at national level, but other levels will be brought in where they had a significant bearing on this focal level.

Our work was broadly interpretive in style (Walsham 1993), with much emphasis being given to accessing the interpretations of people in the field situations through in-depth interviews. The field research was longitudinal, and took place over a two-year period from 2002 to 2004. During this time, we visited the headquarters on three separate occasions, one regional office in Asia, and three country offices located in Africa, Asia and the Caribbean. We interviewed people at most levels of the hierarchy, including senior officials at the headquarters, region and countries, down to lower level staff officers in all these locations. In total, we conducted 44 formal interviews as summarised in Table 2. Most of the interviews at headquarters were tape-recorded and transcribed; but interviews at the country offices were mostly recorded by taking extensive field notes, since it was felt that respondents would be more likely to be open in their opinions if the interview were not tape-recorded.

Table 2 Summary of Formal Interviews Conducted

Level	Number of Interviews	Number of Different People Interviewed	Interviewees
Headquarters	18	16	Heads of departments, senior officials, staff officers, IT staff
Region	5	7	Senior IT and library staff, heads of section, project managers
Countries (3)	21	23	Heads of country offices in all cases; heads of section, staff officers, IT staff, library staff, staff of partner agencies
Total	44	46	Staff at headquarters, regions, countries and partner agencies

In addition to the formal interviews, we had a wide range of additional contacts with staff of the GDA. We started our contact with them through a one-week executive training course on knowledge management for GDA staff carried out at our university. During our visits to the headquarters, we had informal contact with a number of staff members, for example at mealtimes. We also had five audioconferences with our primary contact and colleagues at headquarters over the course of the research project, focused on discussing our research findings to date. For example, we had such a conference after two of our country visits to feed back our impressions from these visits. Two five-week group projects were carried out by MBA students for the GDA, supervised by one of the authors of this paper.

In terms of analysis, this took place in an iterative way throughout the research. We generated sets of themes from each of the major field visits, and discussed these amongst members of our research team and, as noted above, sometimes with GDA staff as well. We continued our reading of the literature on knowledge and knowledge management throughout the research project, and we discussed the relationship between our field data and conceptual ideas on an ongoing basis. We did not rely on fixed research questions, but rather evolved these in a fluid way to respond to what we found throughout the process. Outputs from our

project, including this article, are thus an end product of an iterative process between field data and theoretical constructs.

Finally, we would like to note that our research stance embraced both interpretive and critical elements. Schultze and Leidner (2002) classified ten years of papers on knowledge management in the IS literature using Deetz's (1996) classification of normative, interpretive, critical and dialogic. They found that normative studies dominated the literature, and that nearly all of the research was based on a consensus view of social organization and social order. They found only one example of a critical study. In our research project, we adopted an interpretive approach, as described in some detail above, but we also looked explicitly at power relations, dissensus and conflict. As such, our study can be classed as atypical in its treatment of knowledge and knowledge management, being both interpretive and critical in its positioning.

CHANGING GOALS AND NATURE OF THE GDA

The purpose of this section is to provide a brief overview of the GDA, and in particular to see some of the changing goals and nature of the organization at the time of the field research. As with most organizations in the contemporary world, the GDA was in a state of flux, trying hard to respond to changing circumstances and pressures. In particular, with respect to our focus on the work of country offices in this paper, a widespread view was that more effort needed to be directed to this level. Similarly, it was felt that interventions were needed in the areas of knowledge management, and the role of ICTs was also under scrutiny. We will look now at some of these issues in a little more detail.

Broad Role

The GDA had always been a key player in the health sector, but over time the number of agencies with major interests in the health area had increased. Thus, partnerships with other agencies became increasingly important for the GDA, particularly at country level. A senior headquarters staff member with responsibilities for country co-operation noted this as follows:

'Today the GDA is in sixty global health partnerships following an explosion (of partnerships) in 1998. The GDA works with the World Bank, NGOs (non-governmental organizations) … Country offices and regional offices need guidance as to whether they should work with specific partnerships.'

Related to the increase in partnerships, health was no longer regarded as a stand-alone sector. Instead, many agencies had come to view health as one input into more general goals of development. A headquarters staff member illustrated this with respect to linking health to economic costs:

' The World Bank added the whole question of cost factors, financing health care, the cost of health issues … the GDA never thinks of money. The money doesn't exist in their world (laughs); it is just a given. God provides it when you need it (laughs)'

So, the GDA was forced by its changing environment to address broader issues of the linkage of health to economic goals, and to enter into partnerships with a much wider set of other agencies. Funding came from an increasing number of different sources, and donors wanted to see evidence of improvement 'on the ground', meaning at the country level.

Organization: centre/region/country

So, the country level became increasingly important to donors and others, but the GDA was traditionally a headquarters-centric organization with limited investment and resources at the country level. It was clear to some GDA headquarters staff that this needed to change

'You still have priorities being set here in headquarters, and there are a few new ones with the new head of the GDA, but you have got increasing demand for priorities to be set country by country. And there has to be a healthy mix of the two because the GDA should be challenging countries … as well as agreeing some support and developing capacities'

The interviewee was not arguing for a complete change to a bottom-up approach, but rather for a more balanced centre/country interaction.

The role of the regions further complicated these organizational issues. The regions had considerable autonomy, and in the case of one region almost complete autonomy, in their utilisation of resources supplied by the centre. Countries needed to bid to regions to obtain funds for programmes, giving considerable power to the regions, and further complicating efforts at decentralisation.

Culture

The 'culture' of the GDA came up in many conversations with respondents, but we will pick out just three salient points here. Firstly, many of the staff of the GDA were health professionals, often qualified doctors.   This is a good thing in many ways for an agency with a primary focus on health, but some other features resulting from it could be considered less desirable. Some staff felt that the GDA was a male-dominated, rather 'macho' culture, with little willingness to admit mistakes and learn from them. A female headquarters staff member said the following:

> 'Medical culture … is around being independent, being very self-contained, making a lot of decisions and whatever. And then the other theme is that it is very difficult to identify that you have a weakness … when I first came here, I was astounded how few women there were in senior management.'

Two additional points which were raised by a number of interviewees were that the GDA was not a culture where management was valued, and it was a hierarchical culture and not collaborative. Again, both of these points can be related to the medical world from which many GDA staff came.

Knowledge Management

It should be evident from the above as to why new approaches to knowledge management were felt by some GDA staff to offer opportunities for improvement. Better partnerships with

other agencies and improved communication between the centre, regions and countries implies improved knowledge sharing and communication. Perhaps even the male-dominated, hierarchical, non-collaborative culture of the GDA could be changed in time? A newly-recruited headquarters staff member with responsibilities for knowledge management was enthusiastic that much could be achieved through starting a self-replicating process:

> 'You want the leveraging effect. You want to train the trainers, that kind of thing, where people will take that and start replicating it themselves geometrically so that it is not the centre's role to one by one repeat this process … by gathering the right people, by having a clear agenda, by catalyzing the community'

It is interesting to note that, at the time of the research, the GDA did not have a formal knowledge management strategy, as such, although it was in the process of preparing one. In contrast, the World Bank, another global development agency, had put emphasis on knowledge management as a key strategic goal from 1998 onwards (LaPorte 2002). However, not everyone in the GDA shared the enthusiasm of the person quoted above, neither in terms of the importance of knowledge management to the organization, nor in terms of the ease with which new approaches could be implemented.

ICTs

Those responsible for new knowledge management initiatives in headquarters, and others supporting these, normally saw an increased role for ICTs as an integral part of efforts to improve knowledge sharing, communication across levels within the GDA, and partnering with other agencies. However, ICT resources at country level had traditionally been very poor, and considerable new investment would have been needed to remedy this. Whilst it was easy to state the need for new resources, funding for them competed with other urgent priorities. The head of one of the country offices that we visited illustrated this with an example:

> 'We were to have an ICT team visit us from the regional headquarters to advise on how to develop our country office web site but there were budgetary issues as to who would pay'.

Headquarters had taken some specific ICT-based initiatives aimed at country level, but these tended to be ad hoc, and it was not always evident that they were demand-driven. For example, an intranet designed to enable heads of country offices to communicate with one another electronically was little used.

PROCESSES OF KNOWING

The above section provided material on the changing nature of the GDA at the time of the field research. The emphasis was mainly on headquarters' views of desirable changes in areas such as partnerships, organizational structure and culture, with new knowledge management initiatives and ICTs seen as ways to influence things in the right direction. This section will examine perceptions from the country level concerning such changes, drawing mainly from our field interviews in country and regional offices. However, it is worth noting that a considerable number of staff members in headquarters had experience of working at the country or regional level, so that some of our data on countries came also from that source. We will draw on the formal conceptual framework developed earlier, and summarised in Table 1, to present our analysis.

Supporting Knowledgeability at the Individual Level

We start at the individual level of intervention concerned with changing conceptual thinking and ways of acting at the country level, the embrained and embodied components of context identified in Table 1. We will describe espoused organisational goals for improvements, specific examples of planned interventions, and approaches which could be taken to achieve these, including improved ICT support. We will also, in line with our theoretical emphasis on politics and power relations identify some tensions and dilemmas for each of the examples resulting from organizational realities such as self-interest, entrenched positions or differences of opinion, leading in some cases to dissensus rather than consensus in the organization. A summary of the material in this section is given in Table 3.

Table 3 Changing Individuals

Espoused Organizational Goals	Examples of Planned Interventions	Approaches Including ICT Support	Tensions, Dilemmas and Dissensus
Develop improved *conceptual thinking* of country office staff about their role in the health arena	Make staff see the 'wider picture' on health as part of broader economic development	Recruitment and training Interaction within and outside the country office, using electronic forums where appropriate	Recruitment was traditionally health people, not strategic thinkers, managers or communicators. Hard to change mindsets of older staff. Country staff saw Ministries of Health as their clients – not used to partnering with other agencies
Help country staff towards improved *ways of acting* in health contexts	Better partnering with other agencies at country level	In-depth engagement with other agencies, using a blend of face-to-face and electronic modes	ICT infrastructure and knowledge of ICTs often poor Doubts about headquarters' commitment to improved communication and ICTs

One of the organizational aims that was outlined in the previous section was for the staff of the GDA at country level to see the 'wider picture' on health as part of broader economic development. A related point in terms of improved ways of acting was for staff to actively partner with other agencies. The need for both these changes was perceived to some extent, both inside and outside the GDA. For example, two health officials in partner agencies, interviewed together in the African country we visited said:

'(Interviewee 1) The GDA could be a buffer zone between the donors and the government, but they are not. … Instead of concentrating on numerous vertical projects, the GDA needs to focus on bigger issues such as the link between poverty

and health … (Interviewee 2) The GDA has a lot of technical expertise, but it is as if that is its only role. There are bigger issues such as policy development. It is staying at headquarters level.'

It is interesting to note that, in our interview with the head of the GDA in the same country, it was clear that he was also aware of these issues, and indeed keen to see change:

'One of the GDA's goals is to improve communication both internally and externally. With respect to external communication, most know that the GDA deals with health issues, but I believe that some of them ignore the GDA, and see it as too closely tied to the Ministry of Health … There are … problems with the bilaterals (government to government agencies) and the NGOs'.

So, if these needs were recognised, why were things not changing more rapidly? Many of the staff at the country office level were recruited as doctors, and had no training as strategic thinkers, managers or communicators. Some training was offered to existing staff, but it is difficult to change mindsets dramatically later in life – many of the senior staff at country level were in their late 40s or 50s. In addition, there was some doubt at country level about the seriousness of the commitment at headquarters to improved communication. This was expressed, rather trenchantly, by the head of the GDA in the Asian country office visited by us:

'We at the country office have done nothing proactive on improved communications. We are trying to co-ordinate with the regional office. There is no emphasis on communication in the GDA. We have prima donna doctors … The World Bank opened things up, changed structure, under Wolfensohn. Under the current head of the GDA, initiatives are medical (rather than communication focused).'

A key point here is that, if there is ambiguity at the country level, and indeed throughout the organization, about the seriousness of senior management's view of the need for improved communication, this negatively affects the political context within which individual learning takes place. Individual learners will take account of this, and may well direct their efforts elsewhere.

So, what of the role of ICTs for improved communication and partnering? It is obvious that electronic forums could have, in principle, been used to support interaction both inside and outside the GDA, and this occurred to some extent through the extensive use of e-mail. However, other IT-enabled communication at the country level, for example through electronic discussion forums or web sites, was underdeveloped. Knowledge of ICTs was generally low amongst staff and, again, there was some doubt of headquarters' commitment to this area. Let us return to the head of the Asian country office:

> 'Headquarters must be involved (in improved ICT provision) and interested in funding it. They should allocate money. We try to improve it by spending from our own budget. We need seed money and a co-sharing approach. How come the country office has to pay?'

Re-Structuring the Organization

The specific financial issue of who pays for ICTs leads us by example to the second level of intervention, referring back to Table 1, namely changing organizational structures and processes, including the allocation of resources. We follow a similar format in this sub-section to that above, namely identifying specific examples of espoused organizational goals and planned interventions, approaches to tackle them including the use of ICTs, and problematic tensions and dilemmas. These are summarised in Table 4.

Table 4 Changing Structures and Processes

Espoused Organizational Goals	Examples of Planned Interventions	Approaches Including ICT Support	Tensions, Dilemmas and Dissensus
Re-organize *structures and processes* to place more emphasis on knowledge and communication at the country level	More resources to be allocated to the country level	Money, staff, infrastructure	Political tensions between levels on resource allocation
	More focus on local specificities of countries and local knowledgeability	Integrated library facilities	Traditional medical view of knowledge as top-down
	Improved knowledge exchange between organizational levels	Document sharing, web sites	No clear central policies on knowledge sharing approaches or how to customise them to particular countries

The view that more resources should be made available at the country level was widely supported as an espoused organizational goal but, as we have seen already, there was a gap between the rhetoric and the reality of resource allocation on the ground. A further illustration of this is that the Asian regional office that we visited had more than 20 staff working on IT/IS, whereas the country office we visited in the same region had one person only, and he had other non-IT responsibilities. He said the following:

> 'Technology has changed so much in the last decade. But we are not able to use these services from here (the country office). I don't have the resources and I look to the regional office. IT is not even explicitly mentioned in my job description'.

Resources are, of course, of major importance, but a subtler issue at country level was the need to focus more on local specificities and local knowledge. The GDA operated in most countries of the world and it was self-evident that they needed to tailor their approaches to

different countries. Differences in culture, language, religion and other aspects of social organization affect the way in which approaches to health issues can and should be handled. For example, HIV/AIDS as a disease is similar everywhere, but specific approaches to educating the public and treating patients effectively need to be country-specific.

Most staff in the GDA would no doubt have agreed with the above statement, but organizational structures did not adequately reflect this. For example, library facilities provide an obvious way in which to collect locally-relevant documents and other forms of local 'codified knowledge'. The African country office which we visited did have a library but, to the surprise of the field researcher, had no reader-oriented catalogue, manual or electronic. In addition, the local language of this country is not English, so that such a catalogue would have needed to be bilingual at least. When asked how many people visited the library to access the materials, the library staff member replied 'very few'.

There was a very large library and document centre at headquarters, but it did not have access to some of the materials at the country offices. So, what we saw in the GDA as a whole was a top-down approach to documentation, reflecting the traditional medical culture of knowledge being held centrally and passed down through the hierarchy. The Caribbean country office that we visited was further advanced in terms of its library facilities than the offices we visited in Africa and Asia. However, even here, there were serious issues of time, staff and resource, as summarised by the librarian:

> 'A new thrust of the organization has been on knowledge management: getting people to share information more, developing systems to share intellectual capital … however, a key problem is that it is a very busy office and there is no time to write. So, they want the librarian to write it (a summary of local work carried out). However, this is not feasible.'

This librarian was also involved with a web site, specific to the country office. Again, we were surprised to find that no such web site existed for the African or Asian country visited. Such a web site could have, in principle, been used in a whole variety of ways to aid knowledgeable interaction. It could have contained contact names, documents, details of projects, and access to discussion forums, to name but a few. This could have been used to

support interactions at country level with agency partners, medical practitioners and even members of the general public who had internet access. In addition, country web sites could have, in principle, aided communication between different levels of the GDA hierarchy, with some flow from country to region and headquarters, rather than the other way round. The head of the African country office, when challenged by the field researcher on the issue of a web site, said:

> 'I would like to have a web site as I thought 11 months ago when I joined this country office. There is a willing web developer in the regional office but this is a funding issue. There is a need also for a web co-ordinator.'

Improved library facilities and web sites at the country offices we visited could have been potentially valuable in aiding local knowledgeability and improved communication within and between levels in the GDA and outside. However, in addition to ad hoc improvements, there was a clear need for central policies from headquarters on how the GDA at country level should adopt knowledge sharing approaches, for example through documents, servers, web sites, or libraries. We discussed this lack of central policy with headquarters staff at one of our audioconferences. There was no disagreement with the view that no clear policy existed, although it was noted that 'we are working on it'.

Influencing Attitudes and Expectations

We noted in the brief overview section on the GDA that some staff viewed the culture of the agency as being rather male-dominated with strong hierarchy and low on collaboration. In this final analytical sub-section, in line with our conceptual framework in Table 1, we look at some of the GDA's efforts to influence such attitudes and expectations. A summary of key points is given in Table 5.

Table 5 Changing Culture

Espoused Organizational Goals	Examples of Planned Interventions	Approaches Including ICT Support	Tensions, Dilemmas and Dissensus
Influence the *culture* of the GDA at country level and above – attitudes and expectations	Be less hierarchical Be more open and transparent, internally and externally More lateral communications and knowledge sharing	Messages from senior management e-mails, local library facilities, shared databases, local web sites	Top-management rhetoric not always matched by shift in resources Many senior staff at country level comfortable with hierarchies Established bureaucratic ways of doing things – hard to change

Senior management rhetoric was invariably in favour of a cultural change towards more openness, knowledge sharing and reductions in hierarchy. However, this was not always taken seriously, since the rhetoric was not normally matched with a visible shift in resource allocation. This was succinctly summarised by the head of the country office visited by us in Africa:

> '(New) heads of country offices are given a briefing in headquarters as part of their training, with quite a bit on knowledge sharing. Resources for implementing those ideas are rather less.'

Senior staff in the GDA as a whole had grown up with strong hierarchies, both in their medical training and practice, and during their time at the GDA. It can be argued that many were comfortable with hierarchies. One of the staff officers at the Asian regional office, when talking about reduced hierarchies and improved knowledge sharing, believed that the heads of country offices were themselves a major hurdle:

'We need to facilitate change, not at the technical level (medical officers in the country office) but at the head of country level'.

As with all strongly hierarchical organizations, fixed bureaucratic ways of doing things were common and hard to change. In particular, the GDA at country level had devoted its primary collaborative effort over the years to working with local ministries of health. Such contact was invariably conducted in a cumbersome and rigid way, as described by one of the staff in the Caribbean country office:

'… there are too many requests and all of them come with deadlines and you have to follow many procedures. The formal procedure in which you have to prepare a cover letter for whatever, and then go through the Ministry of Health which normally, even though you copy to the person you are interested in, sometimes they have to wait until the higher level decides that they can answer'

This bureaucratic approach in the ministries was mirrored to some extent in the local GDA offices themselves. A young staff member in the Asian country office, who had moved to the GDA from a private consultancy company made this comparison:

'It was a cultural shock from the private sector company to the GDA. I thought that it was an international organization, but most of the rules and regulations are from 50 years back.'

Newer communications technologies could have, in principle, changed some of this. E-mail communication can bridge hierarchical levels, electronic documentation centres can aid lateral knowledge sharing, and web sites can be a vehicle for openness, both internally and externally to an organization. However, bureaucratic and hierarchical approaches often persist through the minds and attitudes of people. This was nicely summarised by a young staff member in the African country office:

'There are issues of hierarchy – everything has to go through the country head. It is an old-style culture based on memos and faxes. People respond to requests from the country head rather than exercising individual agency.'

It would be inaccurate to suggest that all young staff supported change, while older staff were comfortable with established hierarchies and ways of doing things. Indeed, some senior staff were quite keen to change in a variety of ways. For example, in terms of trying to move towards more openness and transparency, not least with respect to partner agencies, a senior staff member in the African office said:

> 'We do a lot in the GDA but we don't know how to 'sell' what we are doing. Sometimes, we are not included in reports, because people don't know what we are doing. We are not talking a lot of ourselves. We don't have that culture. We don't think we should advertise. There is also a lack of time. We have lots of meetings.'

The seeds of individual and organizational change are there in this statement, as in the views of a significant number the people with whom we interacted during our research project. But cultural change in a long-established bureaucratic, hierarchical organization is hard to achieve.

DISCUSSION

We believe that important insights can be derived from our theoretical approach backed by detailed empirical data, and we have offered a number of these with respect to the GDA throughout the analytical sections. However, we would like to go a little further here to some more general comments on changing processes of knowing. With respect to changing individuals, we have shown that it is not only a matter of recruitment and training practices, although these are both very important. The political context is also vital, for example in signalling whether the senior management of the organization are sufficiently serious about espoused organizational changes to allocate new resources to them. If this is not the case, or there is ambiguity in the organizational messages, then individuals may decide to largely ignore the change rhetoric and reproduce their existing practices.

With respect to changing structures and processes, it is relatively easy for organizations to espouse the need for locally-relevant approaches, as illustrated in the case of the GDA by the

rhetoric of an increased country-level focus. What is much harder is to change existing power structures within the organization in order to make this rhetoric have some counterpart in reality. For example, in the case of the GDA, were headquarters and regions willing to give more autonomy to country level staff, with a concomitant increase in resources? This does not imply an abdication of the centre's role, but rather a shift in its nature. Rather than directing from the centre, such a shift could involve the centre in formulating general policies for knowledge sharing approaches at the local level, but leaving scope for considerable customisation in their implementation. Web sites are an obvious example from the GDA case study.

Moving now to changing culture, a major issue is that hierarchies and established bureaucratic ways of doing things are notoriously difficult to change in any organization. In the case of the GDA at country level, this could be considered to be compounded by its traditional client being the local health ministry. Such ministries themselves are often a bureaucratic nightmare of archaic procedures, rigid hierarchies and outdated information technologies and systems. Nevertheless, change is possible, for example in ways of dealing with partner agencies at country level, and the GDA was widely perceived as being slower than some other development agencies in improving its partnering practices. Is changing culture more complex than changing individuals and organizational structures? We would argue instead, following our analysis of the GDA, that the three 'levels' are inextricably interlinked. Whilst it is useful to separate aspects of them for analytical purposes, change processes need to happen at all levels simultaneously. For example, it is not possible to change hierarchies and partnering approaches without changing the attitude of individuals and the allocation of resources to enable them to act differently.

So what about ICTs in all this? It is clear from the case study that technology, or lack of it, was important to all the processes of knowing, implicated in how individuals acted and communicated, in forms of interaction between hierarchical levels, and in cultural ways of doing things. New technologies offer new opportunities, but whether they are taken up and used to change processes of knowing depends on human agency. E-mail does not deliver better lateral communication if the authority is not there to legitimise this form of interaction. Web sites can be valuable ways of supporting external interaction for example, but only if the power structures and related resources of the organization enable appropriate content to be

created and updated. ICTs are important for globally-dispersed organizations such as the GDA, but they are not solutions in themselves to inflexible bureaucracies, inappropriate resource allocation, or poor attitudes to knowledge sharing. ICTs can, however, be a crucial part of a balanced approach to change in all of these areas.

The key thrust of our paper is conceptual and theoretical, but we wish to make a brief comment on practice in the GDA in particular. Our analysis of the GDA should not be taken as a simple criticism of attitudes, practices and structures within the agency. Much good work had taken place over the years up to and including our research project. Many staff in the agency, at all levels, were trying hard to tackle contemporary issues and problems, for example as evidenced by their willingness to engage with ourselves as researchers. However, there is little doubt that the agency needs to change further in the coming years, not least in its approach to knowledge and its use of ICTs. In terms of the direct practical contribution of our research project to this, we put considerable emphasis during the project on feeding back and discussing our findings with GDA staff at various levels, and we also made specific suggestions for change where we felt these were appropriate. Our continued full access to the agency over the two years of the project offers some evidence that our input was valued. We are, however, aware of the limitations of any practical advice on changing a large global organization based on a limited set of field interviews carried out by a small team of researchers.

CONCLUSIONS

The title of this paper includes the phrase 'changing processes of knowing' and the meaning of 'changing' is deliberately two-sided. In the GDA case study, we were interested, on the one hand, in the deliberate efforts being made, particularly by more senior GDA management, to change the nature of the agency. Examples of these were the espoused organizational goals and planned interventions described in the analytical sections. On the other hand, we were also interested in describing how processes of knowing were actually changing in the GDA, and this did not always match well with the espoused goals in our view. Much of our analysis has been concerned with the reasons for such mismatches, echoing a long-standing theme in the literature distinguishing plans from situated actions

(Suchman 1987), or anticipated changes from emergent or opportunistic changes (Orlikowski 1996).

Our particular approach, based on a detailed theoretical framework, had four distinctive features to it. Firstly, we were concerned with knowledge management and we generated a particular version of the knowing-in-practice approach. Other authors have adopted such an approach, although it remains a minority stream in the knowledge management literature, but the particular synthetic framework in this paper is our own. Secondly, we have placed considerable emphasis on the political context within which knowledge management initiatives take place. Again, this has been called for in the literature, going right back to Lave and Wenger's (1991) seminal work on learning in communities, but empirical studies of this aspect have remained very rare.

A third distinctive feature of our approach is that we have explicitly considered the role of ICTs in our conceptual framework, in the analysis of the empirical case study, and in our discussion of broad insights in the previous section. There is a significant quantity of literature on ICTs and knowledge management but, as noted by Schultze and Leidner (2002), the vast majority of it adopts a normative and consensual approach. Our approach has been interpretive, but with strong critical elements related to our emphasis on power relations. We have illustrated these latter elements in the empirical case study through our discussion of the tensions, dilemmas and dissensus which arose sometimes in the GDA due to conflicting views, competing bids for resources and vested interests.

Fourthly, our paper has used an empirical example of knowledge management in a geographically-dispersed organization, which has been noted as an under-represented area of study (Desouza and Evaristo 2003, Orlikowski 2002). We have aimed to show some of the complexity of such organizations in our short paper here, and thus the difficulty of changing individuals, organizational structures and cultures within them. We believe, from both a research and practice standpoint, that globally-dispersed organizations are very important in this era of increasing globalization (Beck 2000). They are hard to manage or research, involving much time and resources in both cases, but of great relevance. We have aimed to make a contribution to the sparse literature in this area.

In this paper, we have adopted a knowing-in-practice approach, emphasizing in particular the importance of the political context of knowing. We have explicitly considered the role of ICTs as inextricably interlinked with planned interventions and actual results from knowledge management initiatives. Although our case study dealt with a specific organization, the GDA, we believe that our conceptual framework is more generic, and could therefore be applied with value to any global organization. We would like to encourage other researchers to draw from and extend the conceptual approach that we have developed here.

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