

Enacting the Global in the Age of Enterprise Resource Planning

*Hannah Knox, Damian O'Doherty,
Theo Vurdubakis and Chris Westrup*

ABSTRACT: In this article we seek to address 'the experience of work in a global context' by revisiting the relationship between globalisation and information technologies and attributions of local and global effects. We do this through an empirical investigation of enterprise resource planning (ERP) systems, information systems which are purported to enable the institution and the enactment of global business practices. Rather than looking for the metrics that might best demonstrate the shaping influence of global processes upon local work settings – and which would in turn allow talk of such settings becoming more or less globalized – we draw on debates in science and technology studies and in particular the work of Latour in order to re-approach 'the global' as the outcome of a specific set of socio-material knowledge practices. Such an approach allows us to re-situate the analysis of globalization as an emergent, cultural and political phenomenon involving, for example, contestations over the potential and the nature of knowledge, the evaluation of different ways of knowing and the ongoing importance of the embodiment of ideas about the human subject, which we find are being worked out in processes of global (re)organisation.

KEYWORDS: cultural practice, expertise, ERP, globalisation, information technology, knowledge

Introduction

In this article we seek to address 'the experience of work in a global context' by revisiting the relationship between globalisation and information technologies. We do this through an empirical investigation of a particular category of business technologies which are purported to enable the institution and the enactment of 'global' business practices. The particular technologies we focus on to explore these issues are called enterprise resource planning systems (ERP) or enterprise systems (ES).

Accounts of the 'global dimension' of contemporary workplace experiences have often

been thought about in terms of the transformation or marginalization of the 'local' (conceived as the site of identity and community) (Collins 2002; Moeran 2003). The global is typically conceived as a macro site of dynamic economic processes, a 'space of flows' – of capital, knowledge, commodities, people and information (Harvey 1989; Castells 1996, 1997, 2000; Ritzer 2000). In such narratives, information and communication technologies have an enabling role, providing the infrastructural conditions for globalization and its multifarious social effects (Castells 1996; Avgerou 2002; Panagakos 2003). Globalization is thus conceived along a classic sociological division,

which keeps technological conditions neatly partitioned as an objective cause of specific social effects.

Much of the Information Systems literature on ERPs and information technologies more generally provides a now standard critique of objectifications of technology and stresses their co-constitution with the social milieu (e.g. Avgerou 2002, Kallinikos 2004). Likewise, our approach to investigating ERP systems acknowledges that these systems cannot be understood to operate apart from the people, processes and politics involved in their implementation and use. Our interest in what follows, however, is not simply to acknowledge the co-constitution of the social and technical domains, but to explore how the ambition of global reorganisation itself rests upon the re-articulation and re-materialisation of a divide between technical abstraction and social specificity.

In recent years, work in the field of science and technology studies (STS) has urged that greater attention to be paid to the ways in which separations between different spheres of analysis emerge out of arrangements of socio-technical relations (Shapin and Schaffer 1985; Latour 2005; Pickering 2005). Latour has been a particularly significant voice in this respect, outlining an alternative philosophical and methodological approach for the sociology and anthropology of science and technology, an approach which draws attention to the material practices of alignment, translation and purification out of which the conceptual apparatus of both social and scientific analysis are produced (Latour 1979, 1987, 1993).

In this paper we draw in particular on the writings of Latour to ask how we might better understand the experience of work in a global context through a form of what Latour has called 'symmetrical anthropology' (Latour 1993).¹ This requires that we turn a critical eye to the very terms which are usually employed as tools of social scientific analysis, to see how they are produced as the paradigmatic basis

upon which decisions about how to intervene in the world are based. Specifically we turn our attention in this paper to the way in which the ambition of global organization might be analysed not as the sociological result of advances in technological capabilities, but as the practical outcome of situated practices oriented to the successful implementation of information technology (IT) systems. Building on Latour's writings, we explore the way in which the global is not so much a context for action as an achievement and outcome of a set of techniques and practices whose delimitation and definition has powerful implications in establishing the conditions of possibility for ways of knowing and acting.

Standardisation and the Dream of Global Organization

This article is based on research we conducted on the implementation of an ERP system in a British manufacturing company (which we pseudonymously call Alchemica plc). Experiences of work during this implementation process were narrated to us by people either working within or associated with this organisation, and whom we met during fieldwork carried out in 2003 and 2004. Out of these conversations the following story emerged.

In 1999 the board of directors at Alchemica started a move to transform one division of the firm into a 'global' organisation, in what one of our interlocutors termed a (IT facilitated) 'crusade across the globe'. Whilst the company had for many years been a 'worldwide' operation with manufacturing plants and sales outlets on several continents, the 1999 decision signalled a shift in attitude towards the available forms of organization. Whilst the 'Alchemica' name had been used in each country and the profits accrued to the same financial entity, each country had had its own management structure, its own manufacturing procedures and its own software systems to manage these.

Now, with the promise of improvements in the ability of networking technologies to enable digital interconnection, the continuous transfer of data between sites and the concomitant reduction in the price of server storage space, it was perceived that a technological domain was opening up within which the possibility of a 'global' form of operation might be realised (e.g. Davenport 2000; Pollock et al. 2007).

The prospect of achieving a 'vision' of global organisation was to be made possible in practical terms by the introduction and use of an ERP system. ERP systems in the most basic sense are networked software packages that include all of the main programs needed to run a business using computers (e.g. Davenport 2000). Before the age of ERP, so conventional wisdom would have it, each division and department in an organization operated its own stand-alone (legacy) system(s). ERP attempted to sweep away this discordant bricolage of incompatible systems, putting in its stead a single integrated software platform (Davenport 2000). ERP systems come as suites of interconnected 'modules' said to 'mirror' the different functional departments of the model company. Thus a full ERP suite is used by those working in areas such as finance, sales and distribution, production planning, managing human resources and warehouse management to perform tasks like processing invoices, recording goods as they are produced and moved around between factories, warehouses and distribution centres and so on. Each module is able to 'communicate' with the other modules ideally enabling information to flow from one to another, giving the organisation the ability to 'gain greater visibility across the enterprise, get closer to customers, or reduce inefficiencies'.² ERP systems are thus proposed as the means of integrating the activities of disparate divisions of an organization into a global operating model by instituting a unified regime of co-ordination, visibility and inspection – the answer, as Davenport puts it, 'to the Information Age's wildest dreams' (2000: 6).

ERP systems are expected to achieve this aim of integration through a logic of standardization. They are designed to be an instantiation and codification of organizing principles, commonly described as encoding 'best practice' in terms of the functions that an organization needs to perform. As universal applications which can be installed across an organisation, they promise the possibility that this best practice might be operationalized 'globally', the technology forcing people to work in a uniform way across the organization. The global in this sense points less to the existence of processes on an international or world scale, and more to the idea that ideal processes will be enacted at all times in all places within the organization – their global status points to their existence across the whole company and does not rest upon an appeal to size or extension across space (Strathern 1991; Law 2004).

At Alchemica, the introduction of the system was intended as a means of achieving a standardization of working practices by encoding 'procedures' in the software that would enable (or force) people to work in a uniform fashion across geographically dislocated sites (Kallinikos 2004). A commitment to global reorganization was nothing less than a wholesale transformation of organizational structure according to the principles of universal standards. Standardization (the effacement of the local and the idiosyncratic) is of course commonly viewed as the condition and consequence of globalization (Ritzer 2000). Businesses may have long sought to standardize their production procedures, but this global logic performatively embedded in ERP systems held the promise of a greater level of standardization than previously achievable. Moreover, the benefit of standardization was supplemented by the promise of increased amounts of information at greater levels of detail produced by ongoing digital monitoring of activities that could be used for 'strategic effect'.

The process of standardizing organization in this way is an ideal example of the reality-

making exercises that Latour has been interested in exploring. Standards, embodied in technological form, might be seen as a kind of 'immutable mobile' (Latour 1987), a temporary stabilization of extended networks of relationality which come to cohere in a fixed material entity (e.g. a report). Standards are thus not objective truths, which orient action, but the material achievements of situated practices of boundary making, which involve complex and difficult definitional work. Stabilized in the form of laws, protocols and codes, these standards become participants in social relations in ways which appear to give them an ethical force and a political power (Wastell 2001; Ong and Collier 2005; Lampland and Star 2009). If we are to better understand the implications of claims to global organization for contemporary experiences of work, then we suggest that we need to turn our attention to the specific ways in which the messy work of standardization is enacted within and between particular organisations.

The Global and the Local

'An infrastructure occurs', note Star and Ruhleder (1994: 6), 'when the tension between local and global is resolved. That is, an infrastructure occurs when local practices are afforded by a larger-scale technology, which can then be used in a natural, ready-to-hand fashion'. ERP literature notes that ERP systems are only successful to the degree that an organization is willing to ensure a correspondence between its activities and the design of the technology (e.g. Davenport 2000; Kallinikos 2004). ERP systems are designed and developed by specialist software manufacturers, and their implementation in any particular organization involves a process of manipulation to make the universal model fit with local circumstances. More often than not, it is the implementing organization that is expected to 're-engineer' its activities and structure in order to fit in with the 'best

practice' design of the system (e.g. Gattiker and Goodhue 2004). Indeed one of the selling points of the ERP technology is that it encourages a complete re-think of 'old fashioned' ways of working and the restructuring of the business into a more streamlined and efficient form (e.g. Chun-Tsai et al. 2006). This also has the effect of facilitating the efficient insertion of the company into the 'global' network of companies using ERP systems, who are seen to be operating on the basis of identical procedures.

Yet, the detail of fitting a technical model to an actual business is a complicated political process. ERP systems are subject to considerable proprietorial control by their manufacturers. Companies like Alchemica have to buy into long-term contractual support arrangements involving consultants who act as mediators and gatekeepers between vendors and users of the technology. Of course, neither the proprietary technology nor the business implementing the system exist in a relational vacuum, but rather have a broadly shared history, having been oriented by the same theoretical and practical prescriptions of business organization. Nonetheless, it is easy to see such technologies as Trojan horses of disciplinary 'media' and the technology companies as central players in the exercise of disciplinary power. However, jumping too hastily to assertions about the location and exercise of control threatens to resolve too quickly the sites and agents of power, disallowing the possibility of recognizing other effects that such relationships might produce. Instead we turn our attention to the specific ways in which Alchemica dealt with the challenge of integrating a universal model into what they saw as a specific, historically idiosyncratic organizational space.

A project was set up to manage the transition between a model of organization that Alchemica already worked by and the model of global organization embodied by the ERP system. According to one of the consultants intimately involved in this project, Alchemica's implementation project was highly problem-

atic, particularly in the early stages. The first attempt to implement the system had, we were told, spiralled into chaos as Paul, the project leader, insisted on putting all his emphasis on the idea of the global system. During a conversation with a consultant who was involved in the implementation process he told us, 'Paul saw the project as a visioning, change management, business change project and that the detail would look after itself. He saw it having lots of design meetings and visioning and creating a blueprint design for the future'. Members of the design team were afraid to sign off the project and allow it to go to user testing as they were concerned that users would not understand the principles of the design and would corrupt the design with their demands. It was only after months of delays and missed deadlines caused by a seemingly obsessional commitment to the principle that 'quality is paramount' that the project leader was finally removed and the project was restarted. The consultant explained to us that: 'There is no such thing as absolute quality – absolute quality costs infinite amounts of money and infinite amounts of time. You will never implement anything with that attitude and approach'.

The final phase of the project, led by the consultant who we have quoted above, was (by his own account) a much greater success. He explained that his method of implementation involved bringing people who already worked at Alchemica out of their jobs as managers of discrete departments and into the implementation process where they were able to consider what they would need to change in their working practices to fit with the requirements of the system and also to argue where they might be able to fit the system to their needs and their ways of working. For example, in discussing the implementation of a global sales process, the managers were made aware that one of the anomalies in practice within the company was a difference in the ways in which exchange rates were currently calculated in different

international sites. The new ERP system had the capability to enable this to be changed so that everyone would be able to use the same exchange rate – which would automatically be updated at 11am each morning. There was one exception however – the Polish plant was going to have to be exempt from using the ERP-defined exchange rate as Poland used a fixed and not a floating exchange rate (i.e. they were to be subject to an alternative standardization). Set with the task of implementing an enterprise system, managers at Alchemica were required to think explicitly about their work in terms of a relationship between necessary local practice, specific to particular manufacturing plants or country operations, and generalizable global 'processes'. The closer that these two could be made to resemble one another, the better the 'global' organization would function. Moreover, the consultant explicitly described his method as an attempt to merge the design and the implementation stage in a way that would circumvent the problems of trying to 'think globally' without the intervention of the people who would be using the system 'locally'.

The consultant's interpretation of the reasons for the 'success' of the latter implementation appears to rest upon a commitment to abstract ideals and an acknowledgement of the need to recognise the importance of local contingencies. The movement between an ideal universal technological object which holds the promise of a generalized and yet ideal way of organizing and the organization as a local site which corrupts and bastardizes, or alternatively adds to and improves this design, is an important frame within which the imagination of the global in business organization was being played out. In this implementation of a system which was to work on the principle of global standards, there was a critique of the notion that a design process which tethered the global system to a local context could be a separate and abstract process prior to practical processes of configuring the ERP system

for any particular organization. This anxiety echoes Ingold's (1995) assertions about the limits of a view of building that raises abstract design knowledge out of the conditions through which it is produced. It also reminds us of Lave's (1993) work on learning which emphasises the situated and localised means through which all learning occurs.

The challenge that globalization has posed to anthropological research based on 'local' ethnography has led to similar questions over the relationship between abstract and practical knowledge, or between the relative truth or relevance of local or global assertions. In response to anxieties over the relevance of anthropology in a global context, Moore (2004) usefully reminds us that 'the global' and 'the local' are both equally abstract when used as heuristic devices, for example in justifying the importance of ethnographic 'local' specificity for understanding theoretical or 'global' processes. Moore argues that anthropologists must be careful about the claims they make when mobilising terms like local and global, suggesting that we might see terms like 'global' as 'concept-metaphors' whose purpose is not to clarify and fix, but rather 'to maintain ambiguity and a productive tension between universal claims and specific historical contexts' (Moore 2004: 71). Likewise, Tsing (2005: 7) points out that 'it is important to see generalization to the universal as an aspiration, an always unfinished achievement, rather than the conformation of a pre-formed law [...] Whether it is seen as underlying or transcending cultural difference, the mission of the universal is to form bridges, roads, and channels of circulation'.

If this is indeed the power of universals, then the work of Latour is helpful in assisting us in exploring the situated knowledge practices through which universals such as 'the local' and 'the global' become established and allowed to travel. Latour goes further than either Tsing or Moore by outlining a method for discerning the ways in which objects of knowledge become separated out as facts,

and tracing the movements of these 'factish' knowledge objects across different domains of practice (Latour 2011).

Acknowledging the emergent properties of 'the global' and 'the local' as practical claims to knowledge has important implications for understanding the experiences of managers at Alchemica. Implementing an IT system which embodied global principles was not as simple as merely imposing a fixed idea upon an already existing reality, but rather initiated a process of making the organization thinkable and practicable as 'global' via a messy and complex process that was always-already ongoing and unfinished. Moreover, in the call for global organization, the local as a site of detail, history and meaning was enacted as an ever-present other to this principle of the global, which was constantly being re-made and re-worked to remain intact, each 'concept-metaphor' working to redefine and give a space for the re-appearance of its other. In the next section we turn to the specific organizational arrangements and associated knowledge practices through which ongoing tensions between global universals and local specificities were negotiated.

Universal Value and Specific Knowledge

Once the ERP system was in place, the work of retaining the link between specific practices and a universal ideal of global process was taken up by a newly formed department called the competency centre, and by members of the board of directors who took on the role of policing the integrity of the 'global process' as 'global process owners'. The competency centre was established as part of the programme to turn Alchemica into a global organization, its role to conduct the ongoing 'repair work' between the idea of the global process embodied in organizational practices and its computerized manifestation after the implementation

had been completed and signed off. A large part of the job of competency centre staff was to respond to requests that came from users of the ERP system that it be changed in order to enable them to work in the way they felt they needed to, and to decide whether or not the changes were viable according to the standard 'global processes' described above. In this respect, competency centre staff were entrusted with the role of gatekeepers in maintenance of global organizational standards.

Setting up the competency centre involved the centralization of jobs that had previously been located in manufacturing plants around Europe into one office in the company's U.K. headquarters. The competency centre was part of the standard structure of global organization suggested by the ERP system vendor and the staff in the centre worked as archetypal knowledge workers (Blackler 1995; Newell et al. 2002), acting as intermediaries between the supplier of the ERP system, consultants, programmers and Alchemica's managers and 'global process owners'. This centralization of ERP support took place in a climate of cost-cutting that was in many ways driving the project of global transformation. As such, the centralization of jobs into a competency centre was repeatedly raised by people working in the centre as indicative of a background threat they perceived that the work that they were doing might hypothetically be once again dislocated and this time outsourced, possibly to 'offshore' shared services centres located in India or Eastern Europe (Abramovsky et al. 2004; Levy 2005). The head of the competency centre told us, 'I don't want to become an outsourceable technical ERP team. I want to be a team that is valued as part of the business'. The more general possibility of business change leading to outsourcing was in some respects recognized to be unavoidable if circumstances were to dictate that the running of the centre was not financially viable from the U.K. headquarters, but, nonetheless, the means by which they might maintain the need for a centralized,

in-house competency centre was raised in discussions we had with a number of members of staff.

One of the main concerns of the competency centre staff was that they be recognized for a dimension of their knowledge that they were worried was being overlooked – their knowledge of 'the business'. Many people working in the competency centre had been seconded there from departments of the organization that corresponded to the modules of the system that they were supporting, such as manufacturing, warehousing or human resources, and several had been involved in the project to implement the system, which, as discussed above, was concerned with how to create a fit between the system design and organizational processes. But the competency centre had emerged as a support centre for a digital technology with global principles, and the people working within it often felt that whilst their technical competence was assumed, their situated knowledge of *non-technical* issues was devalued as a result. As one employee put it, 'Though it is an IT department per se, most people have come from the business in this department. We are not true techies. I don't know much about the hardware. I couldn't build a PC'. When we spoke to people in the competency centre, they emphasised to us their friendships with particular people, relationships built up over many years, their understanding of the production process (from the functioning of particular pieces of machinery to the organizational networks which constituted the industry as a whole) and their knowledge of the kinds of information that people working in a particular part of the business might find useful. They pointed out how the range of nationalities employed in the competency centre gave them a privileged understanding of the legal regulations of different countries that might disrupt the global principles of the system and they emphasized their knowledge about the characters working in the organization who might claim that there were legal

reasons why a form or a parameter should not be changed when no such law really existed. Julia, a competency centre employee who had worked on the implementation programme, explained the kind of relationship she had with people in the business:

Sometimes the company ask us for something but they don't understand what they are asking for and if they really need it. So they have this report from management accounting [that they want us to produce], but they hadn't thought about how they'd use it. We had to find out what their requirements are – [we had to] keep going back to them, [doing] workshops with them to resolve the issue, and getting help from consultants to help understand the ERP system. Now we are to-ing and fro-ing. [We] get a little bit more knowledge, go back to the business, and one day we might resolve it.

In this respect competency centre staff felt that the value of their knowledge lay as much in their sensitivity to and understanding of the local specificities of the business as it did in the operation of a universal ideal embedded in an IT system. Indeed much of their work involved helping 'the business' make explicit the reasons for local and idiosyncratic ways of working. Although ERP-system vendors claimed that a distinction between the business and the technology would disappear as the ERP system became, in Star and Ruhleder's (1994) words, 'infrastructural', in fact the act of making the infrastructure appear to operate as a global substrate involved the re-assertion of the importance of local knowledge.

The Dangers of the Global

Whilst local practices were rendered problematic in relation to ERP, potentially polluting the standardizing effects of a global IT system, enacting local knowledge was also an important means of countering the risks associated with the ubiquity of global processes. For example, in the concerns of competency centre staff over

the relevance of their technical knowledge and the lack of appreciation of other kinds of knowledge in a climate of outsourcing, we found that the global as a principle of uniformity and abstraction was pushing up against a politico-economic sense of the global as an uneven and shifting marketplace.³ Not only were competency centre staff aware of a commitment to a global principle, but like all employees in Alchemica they were also attuned to the sense that they were working in a global 'context'. The decline of manufacturing in the U.K. had been felt very immediately by long-serving employees who had seen the emptying out of factories in the U.K. and the parallel opening of new factories in China and Russia. In the company headquarters, office space that had been home to Alchemica staff was now being sold off to local businesses looking for accommodation. On the walls of the corridors A0 posters signed by the CEO had been stuck up, detailing the performance of every area (China up 97 per cent; Europe down 0.5 per cent) and also comparing sales between this year and last year: a cost-cutting project, to reduce costs by 20 per cent 'across the board'.

When we asked the head of the competency centre whether she thought that they could go into consultancy, outsourcing their services to other companies, she responded that: 'From a skills base, yes we could. But our value is our knowledge of the business not our knowledge of SAP (Systems, Applications, and Products in Data Processing) so if we become valued by selling our services there is a great danger that we take our eye off the ball'.

In the early days of ERP, programming skills had commanded high prices as people with experience of implementing and supporting ERP systems found themselves able to sell their expertise as consultants to companies wanting to put in such systems. But as people with experience of ERP system implementation and support had become more ubiquitous and widespread the premium placed on this form

of knowing diminished. At the same time, as the practice of implementing an ERP system depended on the purification of the domains of the local and the global, a global context for work practices was also brought into view as ERP forced a reworking of relationships of employment, with implications for the ways in which people reconceived their relationship to material forces that lay beyond their control.

The trope of the ERP consultant that sells their expertise to other organizations is a model of transferable skill, a way of knowing learnt in one place that can be applied in another. In the notion of the transferable skill, the body carries the skill – the skill is an embodied relation with the world and it is the person that moves. The local (body) situates the global (skill), and embeds the person in a nexus of contingent social relations. Residing in a global 'context' may mean that the person finds that their embodied skill is no longer needed and this may prevent them from finding a job, a problem recognised long ago by Braverman (1974). But as long as skills remain linked to the person, the relationship between global processes and the knowing subject is not compromised. Technical skill, as a 'global' way of knowing based on universal standards of operation, is a form of knowledge that is made available for global mobility (Tsing 2005) through the movement or relocation of persons.

In the case of the global logic of ERP systems, however, and in particular their status as *knowledge* management systems, knowledge has a more ambiguous relationship with the subject. These technologies are talked about as if they enable knowledge to be increasingly freed up from this embodied notion of skill. 'Knowledge' in the form of information is being systematized and standardized in a way that makes it appear to 'flow' independently of people (cf. Terranova 2004 on information theory). Knowledge, it is said, has now become mobile, able to leak, seep, be lost, become distributed, pass unrecognised, remain unrealised,

be banked, be managed, or be at risk of being usurped by others (Dodge and Kitchin 2005). In IT-mediated organizations, knowledge appears prone to even greater distribution between objects and subjects (Avgerou et al. 2004). No longer is knowledge solely rendered important as a 'capacity' of the person, gained by training and learning, it is also made to appear as a quantifiable object that emerges with and through global information practices (Thrift 2005). Systems that enact global principles are increasingly viewed as auto-generators of data. Consequently, the knowledge of systematizable forms of work find themselves being transformed from processes enacted by humans to those enacted by machines (e.g. Bloomfield and Vurdubakis 2003; Westrup and Newman 2003) in a process that threatens (or promises) to rid knowledge of its qualitative 'textual' nature. The head of information systems told us how he could imagine an automated 'Willy Wonka'⁴ factory where the whole business could be completely systematized and run without people at all. Here knowledge is conjectured as disassociated from the person as it is freed up, made able to flow, be owned, shared, discarded, transferred, and produced technologically. In this respect it comes to have an object-like status. It behaves like a circulating commodity – 'intangible or knowledge-based assets' (Mohamed 2002: 33, emphasis added). It is, in other words, assumed to be 'out there' – somehow able to circulate independently of any given knowing subject. We might sum up this threat/promise as the spectre of the alienability of knowledge (Thomas 1991; Weiner 1992).

The globalization-technology nexus that is ERP thus not only plays a part in producing the problematic of knowledge as an ongoing tension between the elusive but powerful work of strategic, macro or 'blue-sky' thinking and the situated practice of making these ideas work on the ground, but also (re)invigorates a logic of knowledge that evaluates different ways of knowing according to their relation-

ship to the universal or the local. Whilst the ideal of global business organization would appear to place greater value on universal knowledge, the practice of enacting this global organization actually leads to a reinvigoration of human capacity which we find problematically tied to place. We use 'value' not to denote in the first instance monetary worth, but rather use it more in Graeber's (2001) sense of value as a way of thinking about how people measure the importance of their own actions, a process which is always going to require that they are set against the actions of others. Knowledge, then, is considered a kind of action, and the discussion of the iterative process by which universals are sustained is treated as the means by which people constitute knowledge as an object for themselves, measure the importance of this knowledge and become aware of the possibility of its effects. What we might call a tension or 'knot' (Haraway 1994) between the local and global ways of knowing becomes an awkward locus around which we find contemporary corporate organization is made and remade.

The competency centre employees, then, in their claims for continued relevance and importance in a global 'context', found themselves engaged in what we might call a process of re-entanglement (Callon et al. 2002; Slater 2002) in the 'local context' in order to make their knowledge once again, like skill, inalienable. In order to differentiate the service which they could provide from that of an outside provider, the competency centre staff had to do more than merely support the ERP system. Rather, in doing so, they also had to demonstrate their inalienability from the business. Thomas' (1991) study of circulating objects reminds us that the alienability of circulating commodities depends on people's capacity to sever them from the relationships through which they are produced. In the case of the competency centre employees, ensuring the *inalienability* of their knowledge from the business was a matter of re-charging and

re-cognising the presence of relationships so that their knowledge of the business might be recognised as effective and entangled. This process of making their knowledge inalienable required that they performed their capacity to act globally not by disassociating themselves from the specificities of work within Alchemica, but by making their relationship with the detail of daily business practice apparent. A functional separation of IT and the business was therefore more than just a question for people of having knowledge of one or other domain (Bloomfield et al. 2000). It was, more importantly, a means of articulating and reproducing the processes by which knowledge and work was being given value.

Appreciating the way in which seemingly descriptive terms like the 'global' and the 'local' work in practice to give value to knowledge is not just to describe the experiences of work in contemporary U.K. corporate settings, but has, we would argue, implications for understanding how knowledge-work is being configured internationally along geo-political lines where inequalities within the international labour market are justified through the use of terms like 'moving up the value chain', or the retention of 'high value' creative and strategic work in post-industrial, neo-liberal centres. As we have shown, the terms 'global' and 'local' are ambiguous as terms of evaluation. Whilst global principles sanction companies to find and use low (economic) value work, and the standardization of business through global principles breaks knowledge down to functional processes which are democratic and thus of low value, it is also the trope of the global as mobilized in business technologies that enables the possibility of 'blue-sky' thinking, strategic analysis and business vision or 'high-value' kinds of knowledge-work. Similarly the reassembly of the local and the personal in terms of data, knowledge, relationships, inventiveness, creativity, into ideas and practices which can have large-scale effects is tempered by a sense that the local is problematic, fixed

and rigid, and that situated relational knowledge of 'the business', that holds the potential to entangle people in organizations sufficiently that they might retain their claim on their jobs despite the higher wages required to pay them, is all too human, cultural and local. The relationship between abstract ideals and their counter-reactions in processes of corporate globalization reveal a complicated manifestation of power and struggle amongst agents of organization in their claims for creativity and inalienability.

Internationalisation and the Limits of Specificity

Before concluding, we wish to push this point about the shifting value of knowledge in global organization a little further by commenting on a potential limit to knowledge-work in the business of global organization. One of the effects of the IT-mediated business reorganization into a global logic is a restructuring of management roles from regionally based managers to those who are able to become responsible for 'global' dimensions of business operations. In Alchemica, people who had previously been in charge of country operations in areas such as manufacturing, sales, supply chain and logistics were repositioned with job titles such as 'Operations Controller Worldwide' or 'Vice President of Global Supply Chain' with responsibilities for teams and plants in a large number of countries spread across Europe, Asia and the Americas. An obvious result of this work was the increased amount of international travel expected of these managers. Travel was also an issue for members of the competency centre who were seconded onto projects to implement new versions of the ERP system in new countries as they became incorporated into the 'global' fold. In the restructured organization, international travel had become commonplace, with employees often finding themselves spending

more than half their time away from home. The office desk was being supplanted by the laptop as the airport lounge and aeroplane replaced the office as a space for conducting business via e-mails.

Whilst international travel has become a routine part of these jobs, it also has its points of limit. In Alchemica, as more countries have been incorporated into the model of the global organization and become the subjects of an ERP implementation, the unevenness and difficulty of the travel experience has begun to reveal itself. The following HR (human resource) manager, who was trying to explain to us why HR should be a major consideration for a company like Alchemica in their mission to create a global organization, paraphrased a conversation to express his experience of people's attitude towards travel:

When you came as an engineer we told you it was going to be global ... Yeah, but we didn't think that you meant Iran. I thought you meant I could work in Australia ... Bondi Beach, yes, I'll have a bit of that. America – yes, wow, I never did my gap year so I'll go to America. So that is what happens. If you get jobs out in America, Mexico, Brazil, Australia hands fly up but mention Iran and suddenly it is quiet all around.

In the HR manager's eyes, even when people go to the more popular destinations they find travelling exciting for the first six or nine months but it soon gets them down. 'Everyone thinks it must be great to travel', he confessed,

But it's like, what's Geneva like? Well the airport has not got bad sandwiches and the tulip hotel in Geneva is very similar to the tulip hotel in Warsaw ... there's a factory in Venice but it is not, like, just by St Mark's. Likewise we are building one in Russia at the moment. It is about 30 kilometres outside Moscow. But if you are working there, the transport system to Moscow from where we are is non-existent. Temperatures around this time of year have been around about minus ten to minus thirty. And if you are working five or six days a week that is great but the time you've got off you are just sat in a little crappy hotel and there is no English food there.

The installation and effective operation, therefore, of the machinery of global frictionless knowledge-work and information flows, had as its necessary Derridian supplement, the wearisome circulation of embodied subjects *qua* knowledge workers. In the accounts of our interlocutors, the sense of dislocation and exhaustion that resulted from travel was potentially disarticulated from a discourse of global reorganization. Yet it was a major concern for many 'knowledge workers' and a significant aspect of working globally. Putting in global systems and working globally in a way that retained the centrality of the local in the valuation of expert knowledge had important effects on the situated embodied subject – unforeseen consequences of a global reorganization that was focused on the value of other ways of knowing. The embodied reactions of stress, tiredness, anxiety, frustration, loneliness and estrangement, remain the point where subjects exceed the possibility of reconciling the experiential or local with the abstract or global in the project of producing valued business knowledge. To make the principle of the global work requires not the extraction of the all-too-human from the process but rather the intensification of human experiences into embodied dimensions of being. However, unlike other 'local' types of knowledge (e.g. understanding of 'the business') that can re-entangle people in social relations, these embodied experiences appear irreconcilable with the global knowledge that they participate in producing, working instead to emphasize the individuality and pathological nature of such experiences. Perhaps it is because of this that it remains difficult to acknowledge the legitimacy and value of embodied experience or resistive bodily knowledge as a constituent in the performativity of business knowledge in a global corporate setting. If this is the case, then our call to recognize the way in which the global as a material claim is implicated in evaluations of knowledge is even more important, as it gives us a means to understand how

responsibility for different kinds of knowledge and action is apportioned to either social collectives or autonomous individuals.

Conclusion

Becoming a global organization is not a smooth and linear, incremental or inexorable process of progress. Many organizations find that being 'global' is an impossible, unwieldy position, and choose to regionalize or restructure their production in other ways. Nevertheless, IT-mediated forms of global reorganization continue to be an important model for business practice. We have suggested that IT projects are important sites of material encounters where the enactment of an abstract 'blueprint' is brought into tension with attempts to recover local and embodied social relations through which different kinds of knowledge emerge and become contested. As we have seen, the shape or form of contemporary concerns about the potential and nature of knowledge, the evaluation of different ways of knowing, and the ongoing importance of the embodiment of ideas about the human subject are all being worked out in processes of (re)organization along global lines. Moreover, these self-same tensions are re-worked back into the design process of ERP systems as technology design companies also seek to follow the same globalizing process, enabling the reproduction and possible reconfiguration of these complex and contested spaces of knowledge and its organization.

The re-organization of working lives around IT-oriented organizational change is complex and manifold. Without dwelling on whether or not work has become more global, we have attempted to explore how 'global' working with and through IT is enacted, and the effects of these enactments on the valuation of different kinds of knowledge and embodied action. Building on Latour's notion of 'symmetrical anthropology' we have looked at the way in

which the global as a 'concept-metaphor' or emergent standard, is enacted through the implementation and use of technical systems in contemporary business settings. In doing so, we have attempted to move away from characterizations of the global as a site or a scale which is changing the nature of social relations by altering the spatial conditions for the formation of identity or community. Instead we have shown how an opposition between the global and the local might be approached as the outcome of situated material practices. In this way, claims to the locality or globality of practices are revealed as part of fragile and contested organizational processes, whereby different ways of knowing come to be ascribed value in ways which fundamentally inflect the experience of workers involved in the making of 'global' corporate futures.

Hannah Knox is a Research Fellow at the ESRC Centre for Research on Socio-Cultural Change (CRESC) and affiliate lecturer in the Department of Social Anthropology, both at the University of Manchester. She conducts ethnographic research on engineering, expertise and the role of contemporary knowledge practices in making material worlds. She is currently researching the intersection of nature/culture/knowledge in a study of climate change in Manchester. E-mail: hannah.knox@manchester.ac.uk

Theo Vurdubakis is currently Professor of Organization and Technology at Lancaster University Management School and director of the School's Centre for the Study of Technology and Organisation (CSTO). His research interests focus on the role of technologies in social organization. E-mail: t.vurdubakis@lancaster.ac.uk

Damian O'Doherty is Senior Lecturer in Organization Analysis at the Manchester Business School, University of Manchester. He has published widely in Business and Management Studies, Sociology and the Philosophy of Social Science. He is currently completing a two-year

ethnographic study of a U.K. international airport. E-mail: damian.odoherty@mbs.ac.uk

Chris Westrup is a Senior Lecturer at Manchester Business School. He researches in the area of technologies and organizational change. E-mail: chris.westrup@mbs.ac.uk

Notes

1. Whilst Latour uses the idea of 'symmetrical anthropology' to critique a division between nature and society, we use it to reconsider the division between the local and the global as mutually exclusive domains produced out of a continuity of social relations which are neither/nor and/both local and global.
2. ERP company marketing materials.
3. The notion of context has been widely problematized (e.g. Harvey 1999) so we use the term with caution in this expanding out of the implications of the global and its relationship to the status of knowledge in such 'global' work practices.
4. After the eponymous 'Chocolate Factory' described by children's author Roald Dahl.

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