The nexus of informatisation and internationalisation:

a new stage in the internationalisation of labour

Andreas Boes
Tobias Kämpf

Andreas Boes is a social researcher at the Institute for Social Science Research Munich (ISF München) and an associate lecturer at the Technical University of Darmstadt in Germany. Tobias Kämpf is a doctoral candidate and a social researcher at the Institute for Social Science Research Munich (ISF München) in Germany.

ABSTRACT

For a long time, it was the mainstream view that the internationalisation of labour is limited primarily to industrial manufacturing. However there are now signs that service employment, or more precisely, information work, has also become a focus of globalisation. As a result, a new phase of informatisation has arisen, characterised by the rise of the internet as a new global space of action and new opportunities for an international division of labour. For almost any activity comprising work with digitised information, global information networks have created a new, globally accessible space of production. By this means, geographical distances can be bridged in real time in many labour processes. The dynamics of this development are illustrated in this paper by the IT industry and the rise of India to a new strategic position as a site for IT development, drawing on interviews carried out in India and Germany by the 'Export IT' project (www.export-it.de).

Introduction: new forms of an international division of labour in information work

The development of the world economy has continued to accelerate in recent years. Alongside the general growth of worldwide financial markets, the internationalisation of labour has been intensifying and expanding in scope (see Dicken 2003; Altvater & Mahnkopf 1999). Many labour processes are no longer bound to a single place; rather, they are distributed all over the world between several locations, connected by networks. Different 'places' of production flexibly linked with each other are replacing the spatially integrated production process of the 'Fordist factory'. As early as 1979, Folker, Fröbel et al. predicted that in this way work could become subject to a 'new international division of labour'.

For a long time, however, with a few prescient dissenting voices¹ it was generally held that internationalisation of labour was limited primarily to industrial manufacturing. Internationalisation mainly concerned the blue-collar workers who were characteristic of the Fordist phase of capitalism. In this respect, a remarkable change is now becoming apparent. As the sometimes heated debate about 'offshoring' attests, we must now assume that the service sector is a focus of globalisation as well. In a general sense, the term 'offshoring' is used 'when domestic production is replaced by foreign production due to a decision by a producer to cease or reduce domestic production ... in order to purchase or outsource (subcontract) production abroad' (Storie, 2006: 21)². The special and explosive significance of this concept, though results from the fact that it raises the issue of the relocation of service jobs, involving not only low-skilled but also, and especially, high-skilled work (Boes 2004; Jensen & Kletzer 2005).

This development is remarkable indeed. For a long time, the services were seen by most analysts as non-internationalisable. The 'uno-actu' principle – that production and consumption of a service form a single process and are bound to a specific time and place – were regarded as functioning as a specific 'spatial fix' (Harvey 1981; see also Jessop 2006). Precisely because these services were held to be challenging and complex, it was also taken for granted that they would remain locally bound. Furthermore knowledge-intensive services are currently increasing in importance. The term 'services', however is difficult to define precisely (critically: Girschner 2003), since it spans a wide range of very heterogeneous, hardly comparable activities which are not uniformly amenable to internationalisation. The work of a hairdresser will always have to be performed 'on-site' although this does not necessarily hold true for the processing of the hairdresser's tax return. The criterion of internationalisability seems to apply only to certain services: to those whose key tools and objects are information and information systems. In this paper, we call these activities 'information work' (Boes 2005a; Baukrowitz & Boes 1996; see also Huws 2003).

These knowledge-intensive services are becoming more and more important in both scope and scale, and the issue of their local boundedness is now a focus of attention. Like industrial labour processes, these services are now becoming amenable to an international division of labour. Their 'spatial fix' can no longer be taken for granted. This trend initially focused on IT services and software development, as well as the internationalisation of administrative work (e.g. call centres and financial accounting) in the context of business process outsourcing. However now, with the trend towards the internationalisation of engineering services and selected fields of R&D, even the innovative cores of modern national economies are affected. The trend is by no means restricted to the periphery but affects the very centres of modern developed economies.

1 The first researcher to address the issue of the internationalisation of 'office jobs' was Ursula Huws (1984)

2 On the one hand, offshoring (relocation to remote foreign production sites) has to be distinguished from nearshoring (relocation to nearby foreign production sites). On the other hand, it has to be taken into account whether offshored activities continue to be owned by the company (captive offshoring) or whether they are outsourced to another company (offshore outsourcing) (see Storie 2006).

Informatisation and the development of productive forces in society: from systematic use of information towards a new global 'information space'

In order to fully understand the internationalisation of information work it is necessary to discuss the issue not only empirically but also from a theoretical and conceptual point of view. This necessitates specifying the relation between internationalisation and informatisation more closely.

At first glance, this may not sound very new, since the relationship between globalisation and the rise of new information and communications technologies has been widely discussed in numerous and highly prominent contemporary analyses (see for instance Castells, 1996; Hardt & Negrim 2000; Rifkinn 2000). Moreover, it has been stressed in a number of studies of the internationalisation of the service sector (e.g. Sahay, Nicholson & Krishna, 2003; Flecker & Huws, 2004; Flecker & Kirschenhofer, 2002, Aspray, Mayadas & Vardi, 2006). With only a few exceptions, however, the significance of the new technologies for the internationalisation of work was presumed to be self-evident and has not been subjected to special analysis (for some exceptions, see Ramioul, 2006; Dejonckheere, Flecker & van Hootegeem 2001). Thus, the actual usage of the technology remained mostly a 'black box' in these debates. Furthermore, the discussion was not integrated into the larger framework of theory of society. As a result, the social process of informatisation is frequently oversimplified because it is (wrongly) seen as identical with the rise of computers and computer technologies.

In order to understand the relationship between informatisation and internationalisation theoretically and conceptually, it is not sufficient to consider informatisation merely as the rise of information and communications technologies; this approach fails to do justice to the significance of this development. More importantly, debates about the issues of 'knowledge society' and 'information society' (for instance, Stehr, 1994; Egloff, 1996) demonstrate that such approaches often tend to constrict the issue in mechanistic-deterministic ways. As a result, changes in society can easily be regarded as a mere 'appendix' of technological innovation. The debate about the internet during the period of new economy hype, with its lack of substance and critical perspective, shows the naivety of this approach (e.g. Rifkin 2000; Hardt & Negri 2000). Such approaches overlook the fact that the rise of new technologies as a social process is embedded in the conditions, structures and action patterns of a society. The use of technology is thus shaped and 'superformed' by social structures and actions in a paradoxical, contradictory manner. This social shaping tends to be missed by an analysis that focuses on technology only (Boes & Kämpf, 2006).

In order to avoid such 'shortcuts', we argue that informatisation should be considered from the point of view of a theory of society. It can then be understood as a socio-historical process of conscious, systematic handling of information, especially including the generation and use of information and information systems (Baukrowitz, Boes & Schmiede 2001). The aim in this process is always to make knowledge – which, as such, is bound to specific people and their practices – usable in a manner that is independent of particular people. To this end, the information has to be transferred from its non-material form into a material one. In short: informatisation should be understood as the materialisation of the use of information (Boes, 2005a).

Informatisation is a process that began long before the rise of information and communications technologies such as personal computers or the internet. Rather, informatisation is a general element of historical progress. It is particularly closely linked with the development of human labour. The handling of information and knowledge has always been a key constituent of the human labour process in Marx's sense of the organisation and regulation of human cooperation in the 'metabolic interaction' between human beings and the earth. The reproduction of societies based on the division of labour and the advancement of productive forces cannot exist without a systematic generation, use and transfer of information. The historical rise of capitalism, in particular, is accompanied by an accelerated process of informatisation. A commodity-producing society in which work becomes wage labour and exchange becomes the dominant mode of interaction needs the systematic use of information as a key foundation of social development.

The crucial significance of informatisation for capitalist societies becomes especially evident when viewed historically. The process of informatisation gained special momentum with the emergence of 'organised capitalism' towards the end of the 19th century. The rationalisation of the use of information in large corporations became an important tool for managing and controlling these corporations 'rationally'. The emergence of bureaucracy in corporations and the development of double-entry bookkeeping were two decisive elements in this development (see also Weber, 1920; Kocka, 1969; Braverman, 1974). Subsequently, information became the central framework for regulating ever more complex production processes. Information systems became vital for controlling labour and for this reason they became an inseparable element of capitalist development. In the 20th century, the unhampered dynamics of informatisation finally made possible a 'structural duplication' of material working processes (Schmiede, 1996). A new informational level, so to speak, came into being. Taking the form of a 'real abstraction', this informational level initially mapped the actual-material labour process, and thus made it amenable to control and regulation. This, in turn, allowed for repercussions from the informational to the material level. Such a use of information did not by any means replace the 'metabolic interaction' with nature; rather, this 'metabolism' was increasingly mediated by information systems.

The 'paper apparatus' (Jeidels, 1907) which had developed from book-keeping was eventually replaced by computerisation. When the personal computer replaced mainframe technology at the end of the 70s, it began to be integrated into new network concepts. The emerging complex computer-based information systems formed the basis for the establishment of new forms of rationalisation. In contrast with the Taylorist paradigm, single production steps ceased to be the only object of rationalisation; rather the process as a whole became an object of permanent change, restructuring, and re-combination of sub-processes (Altmann et al., 1986). The basis for this was the connectivity of information within more and more continuous information systems. Such systemic production structures could be flexible because of the adaptability and increasing mutual commensurability of information systems (Baukrowitz, 1996; Boes, 2005a).

With regard to the present spread of global information networks, however, computerisation forms only the overture to a profound change in the process of informatisation. In particular, the rise of the internet from a military-based, limited information system to a worldwide, accessible, open network based on non-proprietary standards marks a qualitative change (Rilling, 2001). Analytically speaking, this results from the fact that a worldwide medium was established which fundamentally changed possibilities for communication and the exchange of information. Previously, information systems had consisted of countless small 'islands', which had emerged within the confines of companies or administrations. These systems were insufficiently linked with each other or even sealed off from each other. Through the internet, these organisation-specific information systems now received a common reference level on an international scale which allowed for mutual connectivity (Schiller, 1999).

This might not appear very spectacular at first glance but it has profound consequences. The growing importance of the internet has led to an enormous acceleration and intensification of informatisation in society since the mid 1990s. It is not just the fields of work and the economy that are being increasingly penetrated with information at an ever-faster pace, but also the world of everyday life, or 'Lebenswelt' as it is termed in German. This emerging 'information space' is increasingly interweaving the realms of the economy and everyday life, bringing into mutual reference the most diverse information uses. A new global 'space of action' thus comes into being in which different actors are not only able to communicate with each other but also to exchange and process digitised information in real time (Boes, 2005a). On the basis of this information system they can interact independently of their actual locations. These globally permeable information systems, together with the internet, develop into a medium, or 'space', which links all the people attached to them and makes their actions mutually connectable. It does not become a new 'virtual' space in the common sense of the word – the users remain actual people who operate computers in real places as interfaces with the world-wide web. But this information system, as a 'mediation', becomes a social space of its own – a social space that has the potential to create a new spatial and temporal relationship between the different 'places' of the users. This social space furnishes a foundation for the development of social relations across large distances. Within this space, local distances seem to be bridged in a new way, without any time lag in the actions and interactions of all participants.

Informatisation and internationalisation – the web as a new global space of production

Along with global logistics and transport systems, the internet thus forms an essential component of the technological infrastructure of globalisation. As a worldwide, open medium the internet, more than any other medium, becomes the mediator of a new dimension to the internationalisation of labour – and this applies not only to information work but to work in general.

A first characteristic of these worldwide information networks is that they have become an 'informational backbone' of distributed production structures. It is not just in information work, but also, and especially, in international manufacturing processes

that the web as a structural duplication can lend coherence to geographically separated production structures. Fragmented and geographically distributed labour processes are represented at an informational level which is layered 'on top of' the physical level. This new level does not reproduce the spatial separation of the sub-processes but integrates them into a single processual entity. The important thing is that at this level of 'structural duplication' a continuous, virtually unbroken 'flow' of information becomes possible. Thus, the organisational differentiation of the production process – which became paradigmatic in many core industrial fields from the end of the 70s – is now based upon the integrative effect of a continuous, trans-corporate information level that makes the exchange of information possible (Baukrowitz, Boes & Schmiede, 2001; see also Sturgeon, 2002; Gereffi, 2005).

Even before the rise of the internet, many different electronic in-house information systems had developed within the limits of corporations. However these 'intranets', were not usually compatible and connectable with each other. They were originally designed to be sealed-off, closed systems, and, furthermore, were built upon different proprietary architectures. With the internet, an open unitary information network came into existence which was no longer based on proprietary standards (Baukrowitz 1996). This made it possible for the different internal information systems to be linked to each other and integrated into a unitary information space. A medium had come into being which allowed for an unbroken flow of information over long spatial distances and across the 'borders' of organisations as well as countries. Segmented sub-processes of production, separated organisationally and spatially from each other, could now be integrated into new overarching processes.

On this basis, complex network-like production structures can be 'kept together'. 'Keeping together' in this context does not only mean that single sub-processes can be connected across spatial and organisational borders; it also means that these processes can be controlled across spatial and organisational borders, because the new information systems are capable of providing transparency in a new dimension – beyond the limits of the immediate local environment. Manifested in the form of key performance indicators, numerical performance measurement systems and complex accounting procedures, the information level becomes a central space for the regulation of distributed production systems. This development also relies upon comprehensive standardisation processes. It was the standardisation of processes and products that allowed for the creation of the clear-cut interfaces which are an essential prerequisite of modularised production structures (see Borrus & Zysman, 1997; Sturgeon, 2002). It is only on this basis that the different segments of a value-added chain can actually be connected flexibly with each other (Schmierl & Pfeiffer, 2005). Control over the capitalist production process is no longer necessarily and immediately tied to the historical form of the 'factory' as the place of local and social cohesion; control may now be exerted in a mediated way, through the use of information and information systems that have no local 'fix'. The spatial decentralisation of many production structures therefore corresponds with an expanding sphere of influence of many company headquarters, as they are able to use a worldwide accessible information base for the expansion of their own domain (see also Baukrowitz, Boes & Schmiede, 2001; Huws, 1985).

This not only refers to the actual regulation and planning of production processes. Wage labour itself becomes a global object of control, independently of its physical location. An important background for this development is the advancing informatisation of labour. The monitoring of performance and skills of workers in a worldwide perspective increasingly depends on how performance can be represented as standardised information capable of being processed in information networks. Thus labour not only becomes amenable to control across borders, but, through advances in the processing of information about performance, it also becomes comparable across borders. Production sites all over the world can be universally compared with regard to their productivity and their contribution to the value chain.

As an 'informational backbone,' global information networks fulfil two essential functions for the internationalisation of industrial processes. On the one hand, they form a medium of control which creates transparency across spatial distance and provides knowledge for the company headquarters on the basis of which decisions can be made centrally. On the other hand, the integrative effect of a continuous information level makes the different sub-processes connectable and linkable through informatised and standardised interfaces. It should be noted, however, that the spatial division of labour itself cannot really be suspended. The different work steps cannot interlock immediately and – most notably – in real time. The objects of labour still have to be transported, necessarily resulting in interruptions to the labour process. Powerful logistics systems have to play the role of a mediator between different sites of production and are thus crucial to the bridging of time and space in the labour process.

In contrast with industrial production, however, in the case of information work we observe a 'time-space distantiation' (Jessop, 2000) which represents a qualitative change within the work process. If the object of labour itself can be digitised, the global information networks can themselves be transformed into a new and original 'space' of production. Examples of such forms of internationalised information work are steadily increasing: the processing of a digitised travel expense claim in a shared service centre; the remote support and maintenance of IT systems; the distributed development of software products. Work on the object of labour can be done 'in' globally accessible information systems; labour can thus be said to be 'taking place' in the information space itself.

By these means, the conditions are emerging that allow for cooperation in the labour process across spatial distances without any time lag. A single object of labour, in the form of digitised information, can be accessible to workers in different places at the same time. Thus, a shared labour process really becomes possible. The global information network becomes a mediator of work steps which can be performed on a single object in different places. Two essential consequences ensue from this observation. First, the 'time-consuming' transport of the shared object of labour – that is the 'annihilation of space by time' (Marx) – can be bypassed and single steps in a work process can interlock in a more direct way. Second, this new 'space' allows for the development of a specific social 'closeness' – in spite of any operational difficulties and cross-cultural misunderstandings. Even if no 'communities of practice' (Lave & Wenger, 1991) in the exact meaning of the term

come into existence, the mere possibility of generating trust by interaction makes it possible to conceive of a true cooperation between workforces.

Even though spatial distances within the labour process may thus be overcome in a qualitatively new way, it should not be forgotten that cooperation in the information space is based on a rigid division of labour. International labour processes in the field of information work are rarely organised according to principles of open and flexible cooperation which could be managed without clear guidelines and divisions of labour. On the contrary, the standardisation of information work is the essential basis of internationalisation (Boes, Kämpf & Trinks, 2005; Boes, 2004; Boes, 2005; Sahay, Nicholson & Krishna, 2003; Huws 2006). Without having to fall back on Taylorist patterns, an 'industrialisation of a new type' is taking place here (Boes, Kämpf & Trinks, 2005), one which is liable to turn large parts of highly qualified 'brain work' into 'real' wage labour – for example in the field of software development (Boes & Kämpf, 2006; Jessop, 2000; Schiller, 1988). Consequently, it is not only the case that standardised processes and work procedures are emerging; single sub-processes of the labour process are also much easier to differentiate than they used to be. In many areas, this standardisation is making it possible for a systematically organised division of labour to emerge, which, in turn, provides the foundation for an internationally distributed and fragmented labour process.

Within the emerging new international production structures, the actual sites of production do not lose their significance by any means. Labour is not becoming 'footloose' (Reich, 1992; see also Bartlett & Goshal, 1989) – labour is and will continue to be 'embedded' and the 'power of locality' remains unbroken (Flecker, 2000; Granovetter, 1985). Internationalisation and informatisation are 'transforming' spaces, but not 'eliminating' them (Mosco, 1996). After all, it is still real people who work and use actual material information networks in actual places, in ways that are shaped by the social and infrastructural conditions of the location of their workplace. The 'information space' cannot suspend the local situatedness of labour. It can, however, correlate different locations of labour, where work is being done on different sub-processes, in a new manner. Labour as such does not become 'virtual', but the space and time which have to be bridged in the framework of a shared labour process are 'compressed'.

The significance of this development can hardly be overestimated. It is obvious that new opportunities of internationalisation are emerging in the field of information work. From the perspective of informatisation, these are expressions of a fundamentally changed technological basis of the development of the world economy. Informatisation, in the form of the growth of global information networks, is enabling a qualitative leap in productivity. These networks are turning into a new space of production for information work, thereby producing a new stage in the internationalisation of labour. The informatisation of many activities frequently subsumed under the general term of 'services' contributes significantly to the current surge of internationalisation in the service economy. To the extent that the informatisation of work is proceeding in this area, new ranges of activities

and new groups of workers, as well as their work, are becoming the objects of a global division of labour. Thus, in many areas which have been held to be non-internationalisable in the past, the issue of the 'place' of production is now becoming a major challenge which the actors of the affected industries will have to confront.

The global IT services industry – towards a new global production model³

We can conclude that the 'space of opportunity' of the world economy (Dörre, Elk-Anders & Speidel, 1997) has been newly opened up for many service companies. The spaces and the frameworks in which they act are expanding not only in relation to sales and distribution but also to production. These companies now have to react to new options for decision-making where formerly there was simply nothing to decide. On the one hand, new markets have to be tackled. On the other hand, the 'geography' of their particular production structures has to be questioned 'critically'. The new challenge is to find, in a global dimension, the most appropriate location for every sub-process in order to ensure the company's competitiveness. What begins as an expansion of options can rapidly turn into a compulsion to act. The rise of new competitors from aspiring regions may put established 'players' and locations under pressure. Under the impression of an accelerated global competition, this restructuring process develops a powerful dynamic.

The development of the IT industry exemplifies this process. Software development and IT services, in particular, have been pioneers and forerunners of the internationalisation of information work. On the one hand, the IT industry is a major enabler of this new stage of development of the world economy. On the other hand, internationalisation is being pushed from within the IT industry itself (Boes et al., 2006). It is especially in this field that global delivery models and new forms of an international division of labour are being developed which, in turn, significantly change the nature of the value chains and the geographical structures characteristic of this branch of industry.

The trend of internationalisation of IT services has recently accelerated, following the example of the hardware industry, particularly after the end of the 'new economy' boom and the associated consolidation processes. In so-called 'offshore' regions like China and India, but also Eastern and Central Eastern Europe, an immense reservoir of highly qualified software specialists have come into being in a comparably short period of time, willing to work for a fraction of the wages of their counterparts in the USA, Great Britain or Germany. At first there were attempts to use this potential reservoir of manpower via 'body shopping' and 'green card' schemes, but soon numerous IT service providers established their own branches in offshore regions⁴. This emerging 'global labour market' for IT professionals (Farrell, 2004) could now be addressed in the information space,

³ This section is based on empirical findings of the research project 'Export IT' (www.export-it.de; Boes et al. 2006). More than 100 interviews were conducted with executive staff, managers of international projects, employees and – if available – deputies of workers' representation in the IT industry in Germany and India.

⁴ It should be noted that Indian-owned companies, such as Tata Software Consultancy and Infosys were among the early players in this development (Huws & Flecker, 2004)

without physical migration. These new locations were not, as they formerly were, designed merely for sales and distribution but were integrated as development centres into the internationalising development networks of many IT companies. Given the comparative cost advantages, such offshore activities came to seem to be an 'economic imperative' (Kirkegaard, 2005). Using modern information and communications technologies and driven by the pressure of international financial markets (Boes, 2004, 2005), the advantages of a 'borderless' division of labour appeared inarguable. Against the background of aggravated competition, what had originally been the strategic intention of many companies merely to enter new markets became superseded by or overlapped with the newer target of cutting costs.

This process of internationalisation has been discussed mainly in the context of the debate on offshoring (e.g. Boes & Schwemmler, 2004, 2005; Aspray, Mayadas & Vardi, 2006; Auer, Besse & Méda, 2006; EMCC, 2005; Huws & Flecker, 2004). In this context, the new offshore locations have often appeared to be 'extended workbenches' of traditional IT locations, where certain parts of the service performance can now be provided more cost-efficiently. The public discussion has been dominated by the risks of imminent job relocation and the fear of many highly qualified professionals that they may become victims of globalisation like their lower-skilled colleagues in the past. The economic consequences of this development (Antras, Garciano & Rossi-Hansberg 2005; Antras & Helpman 2004; Bhagwati, Panagariya & Srinivasan 2004; Samuelson 2004) and the effect on employment balance thus became the main focus of scientific controversy (Baily & Lawrence 2005; Amiti & Shang-Jin 2004; Kirkegaard 2005; van Welsum & Reif, 2006; Gerstenberger & Roehrl 2006; van Welsum & Vickery 2005).

But with regard to the theoretical perspective chosen above, which stresses the interrelation between informatisation and internationalisation, this discussion has not always gone far enough. The dynamic internationalisation processes within the IT industry should not be discussed simply in relation to job relocations and cost reductions. This approach underestimates the new opportunities opened up in this new international division of labour and tends to reduce it to a 'simple' model of cutting costs. But if we conceive the rise of global information networks as a leap in the productive forces of capitalism, offshoring appears merely as the 'tip of an iceberg,' as an expression of much more fundamental changes (see also Blinder 2006; Mosco 2006). These changes must not be mistaken for simple job relocation and the mere build-up of 'extended workbenches' in offshore regions. Rather, they should be interpreted as signs that a new global model of production is coming into being in the field of IT.

This new global model of production is based on two developments: the consistent and systematic use of the new possibilities for international division of labour in this area of highly qualified information work, and the industrialisation of the basic processes of the IT industry. The core of this 'industrialisation of a new type' is the standardisation of products and processes (Boes, 2004, 2005). Without the prevalence of certain standards – e.g. with regard to interfaces, working procedures or even products features – there is no possibility that this industry

could be internationalised. In particular, the introduction of processes with clear rules of conduct and a distinct division of labour is of crucial importance (see also Sahay, Nicholson & Krishna, 2003; Huws & Flecker, 2004). Such robust processes, which are explicitly oriented towards the requirements of an internationally distributed delivery of services, are now becoming a prerequisite for a qualitative leap regarding internationalisation. As a result, new locations can be opened up strategically for the production of services, and geographically separated labour processes can be re-integrated in the new space of production created by global information networks (Boes 2004, 2005). As a consequence, the question of 'place of production' now becomes important in the field of software development and IT services, since it is now necessary to choose the most appropriate location on the globe for every single step in the labour process. The main parameters in this decision process are by no means restricted to cost issues but include factors like proximity to customers, availability of skills and competencies and social embedding. The result is the rise of network-like development structures in which different locally separated units interact globally in a distributed working process.

The essential point is that the locations in the so-called offshore regions do not remain mere appendices of the traditional Western IT centres. Rather, in the course of a maturation process, increasingly complex and sophisticated tasks are being transferred to many offshore locations. To the extent that they succeeded in 'moving up the value chain', their position within the production structures of IT industry has changed – and, as a consequence, the production structure itself has changed. What were once just 'workbenches' are turning into actors that, because of their strategic significance, increasingly play a role of their own in the development networks of many IT companies. This development may be graphically illustrated with examples from the Indian IT industry. Starting from the simple handling of the Y2K problem⁵, this country has developed into one of the most important locations for high quality IT services. Today, it is not only simple coding or testing of software that takes place in India, but increasingly very sophisticated consultancy services. The success of the Indian IT industry is evidenced by the very rapid growth of the most important Indian IT service providers. Corporations like Tata, Infosys and Wipro have recorded impressive growth rates. It is not unusual for these corporations to hire up to 10,000 highly qualified IT professionals per quarter year. Even if this growth in employees mainly takes place in India itself, it is significant that these companies are beginning to establish bases in major developed countries like USA and Europe as well⁶.

The secret of this success story is by no means only based on low costs, a point that is underscored by the very rise of successful Indian IT service providers which increasingly become competitors of Western IT companies not only on the basis of price but also because of the high quality of their services (Vickery et al. 2006).

5 It should be noted that several of the Indian companies that captured large shares of the Y2K market had previously built up their expertise and their contacts with US and European customers through bodyshopping during the 1980s and early 1990s (Huws & Flecker, 2004).

6 Actually this process highlights the complexity of contemporary internationalisation, as Indian companies are now starting to create jobs in the US and Europe, too.

The success of the Indian companies can be attributed to robust processes which are especially oriented towards the needs of an internationalised IT industry organised in network structures. Corporations outside the developed centres are now becoming capable of taking a leading role in the internationalisation process. India is no longer a mere 'workbench' of the IT industry but has changed the global geography of the IT industry in the long term by advancing to become a new 'strategic site' away from the US and Europe. India's importance as an innovator in the IT industry continues to increase and it has become a home base of new actors which are now starting to threaten the position of traditional Western IT companies in their own markets.

This development shows that a new global model of production is in the process of asserting itself in the IT industry. Besides the standardisation of products and processes, it is based to a great extent on the new opportunities of internationalisation which are connected with the rise of global information networks. Here the dialectics between space and physical location which characterise the new stage of internationalisation finally become evident. Even though globally accessible information space turns into a space of production, the actual place of production is not losing its significance by any means. After all, it is not a historical coincidence that, of all countries, India has established itself as a new strategic global location of the IT industry; rather, this is the expression of a specific business environment. Locally bound factors like the sophisticated Indian education system, the state policy of funding the IT industry, the large talent pool, etc. have created a specific 'structural coherence' (Jessop 2002) which has made possible India's rise to a new strategic place in the global IT industry.

Outlook – on the 'social fixes' of informatisation and internationalisation

The example of the IT industry clearly shows the enormous potential which is connected with this new stage of internationalisation. On the basis of a new dimension of informatisation whereby the rise of the internet has created a new global space of action, completely new opportunities for an international division of labour have arisen. Global information networks may now become a new, globally accessible space of production for almost any activity comprising work with digitised information. In this way, geographical distances may be bridged in real time in many labour processes – and, as a consequence, the issue of the specific 'spatial fix' is raised anew for a growing number of fields of work.

However these new opportunities and potentials of internationalisation are not developing immediately and without detours. The relation between the new global 'social spaces' and the actual physical places of work is driven by the process of informatisation, but is invariably shaped in interaction with specific social conditions. In particular, the consequences of this leap in productivity are shaped and 'superformed' by the specific social conditions of capitalist societies. Causally speaking, there is a particular 'social fix' of informatisation and internationalisation.

The interrelationship between 'social space' and physical location in contemporary capitalism always develops between conflicting priorities, most specifically between cooperation and competition, a conflict which is at the bottom of the specific

constitution of the labour process. New opportunities of international division of labour may take the shape of a global race for the best location, which in turn may lead to a global 'race to the bottom'. For this reason, workers from other 'places' are not only perceived as partners for cooperation and colleagues but also as rivals, 'driving down wages' and 'destroying our jobs.' The potential of the new opportunities of internationalisation cannot unfold easily if they are mainly experienced as a threat. The new opportunities are constantly on the verge of turning into their opposite – xenophobia, nationalism and protectionism. However, in shared cross-border labour processes a new awareness of community, and maybe even solidarity, can develop, arising from the experience of actual cooperation. As a consequence, important trade union federations like the Union Network International are currently pushing the perspective of international solidarity and support the worldwide organisation of information workers in order to mitigate the risk of national groups being played off against each other.

The extent to which the potential of a new phase of internationalisation of labour can be realised is, therefore, not a technical or a management question. Rather, it will depend on whether a hegemonic logic of competition or a hegemonic logic of cooperation will prevail in the new social spaces which are developing within the global information networks in the framework of cross-border labour processes. This is a social question.

© Andreas Boes and Tobias Kämpf 2007

REFERENCES

- Altmann, N., M. Deiß, V. Döhl, & D. Sauer (1986) Ein 'Neuer Rationalisierungstyp' – neue Anforderungen an die Industriesoziologie, *Soziale Welt*, 37(2/3):191-206
- Altvater, E. & B. Mahnkopf, B. (1999) *Grenzen der Globalisierung. Ökonomie, Ökologie und Politik in der Weltgesellschaft*. Münster: Westfälisches Dampfboot
- Amiti, M. & W. Shang-Jin, (2004) 'Demystifying Outsourcing', *Finance and Development*, 41(4):36-39.
- Antras, P. & E. Helpman (2004) Global Sourcing. *Journal of Political Economy*, 112(3):552-580
- Antras, P., L. Garciano, L. & E. Rossi-Hansberg (2005) *Offshoring in a Knowledge Economy*, Stanford, New York: National Bureau of Economic Research
- Auer, P., G. Besse & D. Méda (2006) *Offshoring and the Internationalization of Employment. A challenge for a fair globalization?*. Geneva: International Labour Organization (ILO)
- Aspray, W., F. Mayadas & M. Vardi, (eds) (2006) *Globalization and Offshoring of Software*, New York: Association For Computing Machinery (ACM)
- Baily, M. & R. Lawrence (2005) 'Don't blame trade for US job losses' *McKinsey Quarterly*, No. 1
- Bartlett, C. & S. Goshal, S. (1989) *Managing across borders: the transnational solution*, Boston: Harvard University Press
- Baukrowitz, A. & A. Boes (1996) 'Arbeit in der "Informationsgesellschaft". Einige grundsätzliche Überlegungen aus einer (fast schon) ungewohnten Perspektive', in R. Schmiede, (ed), *Virtuelle Arbeitswelten. Arbeit, Produktion und Subjekt in der 'Informationsgesellschaft'*, Berlin: edition sigma:129-158
- Baukrowitz, A. (1996) 'Neue Produktionsmethoden mit alten EDV-Konzepten' – Zu den Eigenschaften moderner Informations- und Kommunikationssysteme jenseits des Automatisierungsparadigmas', in R. Schmiede, (ed), *Virtuelle Arbeitswelten. Arbeit, Produktion und Subjekt in der 'Informationsgesellschaft'*. Berlin: edition sigma:49-77
- Baukrowitz, A., A. Boes & R. Schmiede (2001) 'Die Entwicklung der Arbeit aus der Perspektive ihrer Informatisierung', Matuschek, A. Henninger & F. Kleemann, (eds) *Neue Medien im Arbeitsalltag: Empirische Befunde, Gestaltungskonzepte, theoretische Perspektiven*, Opladen: Westdeutscher Verlag: 217-235

- Bhagwati, J., A. Panagariya & T. Srinivasan (2004) 'The muddles over outsourcing', *Journal of Economic Perspectives*, 18(4): 93-114
- Blinder, A. (2006) 'Offshoring: The next industrial revolution', *Foreign Affairs*, 85(2):113-128
- Boes, A. (2004) 'Offshoring in der IT-Industrie', in A. Boes & M. Schwemmler, (eds) *Herausforderung Offshoring – Internationalisierung und Auslagerung von IT-Dienstleistungen*, Düsseldorf:edition der Hans-Böckler-Stiftung: 9-140
- Boes, A. & M. Schwemmler (2004) *Herausforderung Offshoring*, Düsseldorf: edition der Hans-Böckler-Stiftung
- Boes, A. (2005) 'Auf dem Weg in die Sackgasse', in: A. Boes & M. Schwemmler, (eds) *Bangalore statt Böblinge*, Hamburg:VSA: 13-65
- Boes, A. (2005a) 'Informatisierung', in SOFI; IAB; ISF München; INIFES, (eds) *Berichterstattung zur sozioökonomischen Entwicklung in Deutschland – Arbeit und Lebensweisen. Erster Bericht*, Wiesbaden:VS Verlag für Sozialwissenschaften: 211-244.
- Boes, A. & M. Schwemmler (2005) *Bangalore statt Böblingen*, Hamburg: VSA
- Boes, A., T. Kämpf, T. & K. Trinks (2005) 'Eine neue Phase in der IT-Industrie: Industrialisierung, Internationalisierung und Innovation', *FifF Kommunikation*, 22(4):46-50
- Boes, A. & T. Kämpf (2006) 'Internationalisierung und Informatisierung – Zur neuen Produktivkraftstruktur globaler Wertschöpfungsprozesse' in A. Baukrowitz, T. Berker, S. Pfeiffer, R. Schmiede & M. Will, (eds) *Informatisierung der Arbeit – Gesellschaft im Umbruch*, Berlin : edition sigma:320-334
- Boes, A., T. Kämpf, B. Knobloch & K. Trinks (2006) *Development Scenarios of Internationalization in Software and IT Services. First Results of an Empirical Inventory*, Working paper 2 of the project Export IT, Munich: ISF München
- Borras, M. & J. Zysman (1997) *Wintelism and the Changing Terms of Global Competition – Prototype of the Future?*, BRIE Working Paper no. 96B, Berkeley: Berkeley Roundtable on the International Economy
- Braverman, H. (1974.) *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*, New York: Monthly Review Press
- Castells, M. (1996) *The rise of the network society*, Oxford: Blackwell
- Dejonckheere, J., J. Flecker & G. van Hootegem, (2001) *Der Beitrag der IKT zum Wandel der Arbeitsorganisation – Ursache, Trendsetter oder Hindernis? Schriftenreihe 1*, Vienna: FORBA
- Dicken, P. (2003) *Global shift: reshaping the global economic map in the 21st century*, London: Sage
- Dörre, K., R. Elk-Anders & F. Speidel (1997) 'Globalisierung als Option – Internationalisierungspfade von Unternehmen, Standortpolitik und industrielle Beziehungen' *SOFI-Mitteilungen*, 25(1): 43-72
- EMCC (2005) *Offshore Outsourcing of business services – four case examples*, Dublin: European Foundation for the Improvement of Living and Working Conditions
- Egloff, N. (1996) 'Postindustrielle Dienstleistungsgesellschaft oder industrielle Arbeitsgesellschaft? Zum gesellschaftstheoretischen Kontext der These von der "Informationsgesellschaft"', in R. Schmiede, (eds) *Virtuelle Arbeitswelten: Arbeit, Produktion und Subjekt in der 'Informationsgesellschaft'*, Berlin: edition sigma:79-106
- Farrell, D., M. Laboisiere, J. Rosenfeld, S. Stürze & F. Umezawa (2005) *The emerging global labour market: Part II –The supply of offshore talent in services*, New York: McKinsey
- Flecker, J. & S. Kirschenhofer (2002) *Jobs on the Move: European Companies Relocating eWork*, IES Report 386, Brighton: Institute for Employment Studies
- Flecker, J. (2000) 'Transnationale Unternehmen und die Macht des Ortes', in C. Dörrenbacher & D. Plehwe, (eds) *Grenzenlose Kontrolle? Organisatorischer Wandel und politische Macht multinationaler Unternehmen*. Berlin: edition sigma:45-70
- Fröbel, F., J. Heinrichs & O. Kreye (1979) *The New International Division of Labour*, Cambridge: Cambridge University Press
- Gereffi, G. (2005) *The new offshoring of jobs and global development*, Geneva: International Labour Office

- Gerstenberger, B. & A. Roehrl (2006) 'Service jobs on the move – offshore outsourcing of business related services', in P. Auer, G. Besse & D. Méda, (eds) *Offshoring and the Internationalization of Employment. A challenge for a fair globalization?*. Geneva :International Labour Organization: 57-72
- Girschner, C. (2003) *Die Dienstleistungsgesellschaft. Zur Kritik einer fixen Idee*, Köln: PapyRossa
- Granovetter, M. (1985) 'Economic Action and Social Structure: The problem of Embeddedness', *American Journal of Sociology*, 91(3):481-510
- Hardt, M. & A. Negri (2000) *Empire*, London: Harvard University Press
- Harvey, D. (1981) 'The spatial fix: Hegel, von Thünen and Marx', *Antipode*, 8(2):1-12
- Huws, U. (1984) 'The runaway office jobs', *International Labour reports*, March-April 1984
- Huws, U. (1985) 'The Global Office: Information Technology and the Relocation of White-collar work', *Third World Trade and Technology Conference Papers*, London: Third World Information Network
- Huws, U. (2003) *The making of a Cybertariat: Collected Essays by Ursula Huws*, New York: Monthly Review Press
- Huws, U & J. Flecker, (2004) *Asian Emergence: The World's Back Office?*, IES Report 409, Brighton: Institute for Employment Studies
- Huws, U. (2006) *Begging and bragging: the self and the commodification of intellectual activity*, Inaugural professorial lecture at the London Metropolitan University, 7th June, London: London Metropolitan University
- Jeidels, O. (1907) *Die Methoden der Arbeiterentlohnung in der rheinisch-westfälischen Eisenindustrie*, Berlin: Centralverein für das Wohl der arbeitenden Klassen
- Jensen, B. & L. Kletzer (2005) *Tradeable Services: Understanding the Scope and Impact of Services Offshoring*, WP 05-9, Washington: Institute for International Economics
- Jessop, B. (2000) 'The state and the contradictions of the knowledge-driven economy', in J. Bryson, P. Daniels, N. Henry & J. Pollard (eds) *Knowledge, Space, Economy*, London: Routledge: 63-78.
- Jessop, B. (2002) *The Future of the Capitalist State*, Cambridge: Polity
- Jessop, B. (2006) 'Spatial fixes, Temporal fixes and Spatio-temporal fixes' in N. Castree & D. Gregory (eds) *David Harvey: a critical reader*, Oxford:Blackwell
- Kirkegaard, J. (2005) *Outsourcing and Offshoring: Pushing the European Model over the hill, rather than off the cliff*, Washington: Institute for International Economics
- Kocka, J. (1969) *Unternehmensverwaltung und Angestelltenschaft am Beispiel Siemens 1874-1914. Zum Verhältnis von Kapitalismus und Bürokratie in der deutschen Industrialisierung*, Stuttgart: Klett
- Lave, J. & E. Wenger (1991) *Situated Learning. Legitimate peripheral participation*, Cambridge: Cambridge University Press
- Mosco, V. (1996) *The political economy of communication*, London: Sage
- Mosco, V. (2006) 'Knowledge and Media Workers in the Global Economy: Antinomies of Outsourcing', *Social Identities*, 12(6): 771-790.
- Ramioul, M. (2006) 'Organisational change and the demand for skills' in U. Huws (ed) *The transformation of work in a global knowledge economy: towards a conceptual framework*, WORKS Project, Leuven: Catholic University of Leuven: 97-118
- Reich, R. (1992) *The Work of Nations: Preparing Ourselves for 21st Century Capitalism*, New York: Vintage Books
- Rifkin, J. (2000) *The Age of Access*, New York: Jeremy P.Tarcher, Putnam
- Rilling, R. (2001) 'Eine Bemerkung zur Rolle des Internets im Kapitalismus' in H.-J. Bieling, (ed) *Flexibler Kapitalismus – Festschrift für Frank Deppe*, Hamburg: VSA
- Sahay, S., B. Nicholson & S. Krishna (2003) *Global IT Outsourcing*, Cambridge: Cambridge University Press
- Samuelson, P. (2004) 'Where Ricardo and Mill rebut and confirm arguments of mainstream economists supporting globalization', *Journal of Economic Perspectives*, 18(3):135-146
- Schiller, D. (1988) 'How to think about information' in V. Mosco & J. Wasko (eds) *The political economy of information*, Madison: The university of Wisconsin press:27-43

- Schmiede, R. (1996) 'Informatisierung und gesellschaftliche Arbeit' in R. Schmiede, (eds) *Virtuelle Arbeitswelten – Arbeit, Produktion und Subjekt in der 'Informationsgesellschaft'*, Berlin:edition sigma:107-128
- Schmierl, K. & S. Pfeiffer (2005) 'Die Lego-Logik der kapitalistischen "Netzwerkökonomie" – Theoretische Spekulationen zum Wandel der gesellschaftlichen Arbeit' in M. Faust, M. Funder & M. Moldaschl, (eds) *Die Organisation der Arbeit*. München, Mering:Hampp:43-66
- Stehr, N. (1994) *Arbeit, Eigentum und Wissen. Zur Theorie von Wissensgesellschaften*, Frankfurt am Main: Suhrkamp
- Storie, D. (2006) *Restructuring and employment in the EU: Concepts, measurement and evidence*, Dublin: European Foundation for the Improvement of Living and Working Conditions
- Sturgeon, T. (2002) 'Modular production networks: a new American way of industrial organization', *Industrial and corporate change*, 11(3):451-496
- van Welsum, D. & G. Vickery (2005) *Potential Offshoring of ICT-Intensive using Occupations*, Paris: OECD
- van Welsum, D.. & X. Reif (2006) *The share of employment potentially affected by offshoring – an empirical investigation*, OECD Working Party on the Information Economy (DSTI/ICCP/IE(2005)8/FINAL), Paris: OECD
- Vickery, G., D. van Welsum, S. Wunsch-Vincent, X. Reif, J. Houghten, E. Muller & V. Weber (2006) *OECD Information Technology Outlook*, Paris: OECD
- Weber, M. (1920, reprinted 1964) 'Vorbemerkung zu den gesammelten Aufsätzen zur Religionssoziologie', in M. Weber, (ed) *Soziologie, Weltgeschichtliche Analysen, Politik*, Stuttgart: Klett