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**The social impacts of changes in the spatial and
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Submitted by Ursula Huws

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The social impacts of changes in the spatial and technical division of labour

PhD by prior output, submitted by Ursula Huws, 2008
under the supervision of Sam Whimster, London Metropolitan
University

This PhD brings together a collection of published articles produced between 1978 and 2007 which aim to develop a coherent explanatory framework for understanding changes in the spatial and technical division of labour over time, and the social impacts of these changes. The components of this explanatory framework are presented here as ten separate, though necessarily inter-related, theses, as follows:

1. The process of commodification underlies changes in the technical and spatial division of labour.
2. Commodification relies on the standardisation of processes and takes place within the context of a division of labour which can be characterised as a 'value chain'.
3. The rationalisation and standardisation which is necessary for commodification to take place in turn relies on the codification of workers' knowledge.
4. This process has a dual impact on skills - a simultaneous creation of high-skilled jobs for some and deskilling of other jobs, eroding or destroying traditional occupational identities and generating new ones.
5. These changes in occupational identities create major challenges for class analysis.
6. The outcomes of changes in the division of labour are socially and politically shaped and heterogeneous.
7. Technology is a key enabler of these changes, but does not inevitably determine them.
8. Changes in the division of labour in the formal economy are integrally linked with the division of labour in unpaid work.
9. The 'knowledge economy' can best be understood as an effect of the general elaboration of the spatial and technical division of labour.
10. This analysis has implications for how future research should be designed and conducted.

The nineteen submitted articles are accompanied by a document which elaborates on these theses, demonstrates how they are interconnected, traces some of their

intellectual origins back to the work of leading figures in political economy and sociology of the 18th, 19th and 20th centuries, and discusses the contributions they have made to knowledge.

A full bibliography of publications by Ursula Huws is also included.

Publications submitted for this PhD

The Making of a Cybertariat: Collected Essays by Ursula Huws, Monthly Review Press, New York and Merlin Press, London, July, 2003 (208pp).

'Global restructuring of Value Chains and Class issues', (with Simone Dahlmann) in proceedings of ISA Conference: *Work and Employment: New Challenges*, Montreal, August 28-30, 2007. This will be republished under the title 'New forms of work; new occupational identities' in N. Pupo and M Thomas (eds.) *Interrogating the 'New Economy': Restructuring Work in the 21st Century'*, Broadview Press, Peterborough, Ontario (in press).

The emergence of EMERGENCE: the challenge of designing research on the new international division of labour' in Huws, U (ed.) *Defragmenting: towards a critical understanding of the new global division of labour*, *Work Organisation, Labour and Globalisation Volume 1 No 2*, 2007, pp 20-35

'The restructuring of global value chains and the creation of a cybertariat' in May, Christopher (ed.) *Global Corporate Power: (Re)integrating companies into International Political Economy* (International Political Economy Yearbook volume 15), Lynne Rienner Publishers, 2006, pp 65-84

'Fixed, Footloose or fractured: work, identity and the spatial division of labour' in *Monthly Review*, Vol. 57 No 10, March , 2006, pp 34-44

'What will we do? The destruction of occupational identities in the Knowledge-based Economy', *Monthly Review*, Vol. 57 No 8 January, 2006, pp 19-34

The Restructuring of Employment in the Information Society and its Implications for Social Protection' in Bechman, G., Krings, B-J and Rader, M (eds.) *Across the Divide: Work Organization and Social Exclusion in the European Information Society*, Campus Frankfurt/M, Frankfurt, 2002, pp 139-152

'The Persistence of National Differences in the New Global Division of Labour in eServices' in proceedings of conference *Globalisation, Innovation and Human Development for Competitive Advantage*, Asia Institute of Technology, Bangkok, December, 2002, Vol. 1, pp 1-10

'The Changing Gender Division of Labour in the Transition to the Knowledge Society' Rubenson, K. and Shuetze J.G (eds.) *Transition to the Knowledge Society: Policies and Strategies for Individual Participation and Learning* UBC Institute for European Studies, Vancouver, 2000, pp 341-355

Introduction

As many analysts have observed (perhaps most notably Durkheim, 1893), its division of labour is perhaps the most fundamental distinguishing feature of any society. The division of labour defines the roles played by men and by women, determines patterns of authority and deference, structures hierarchies, and assigns people to groups, creating patterns of inclusion and exclusion, solidarity and competition, and shaping their inter-relationships.

Changes in the division of labour thus have profound social impacts. This thesis brings together a body of work which aims to develop a conceptual framework for understanding and modelling the underlying dynamics of change in the division of labour in order to shed light on these social impacts.

Its starting point was a series of overlapping research questions originally inspired both by the scholarly debates of the 1970s in the fields of political economy, sociology of work and gender studies and by the urgent political questions raised during the same period in response to the economic upheavals taking place as a result of the energy crisis, major industrial restructuring and rapid technological change in a context of trade union militancy and new demands arising from the women's movement, anti-racist movements and community-based campaigns.

These questions included: What are the impacts of technological change on employment? Does automation inevitably lead to mass unemployment and if not, why not? What is the relationship between skill and bargaining power on the labour market? What is the relationship between women's labour market participation and the gender division of labour in unpaid household work? These questions led to a deeper search for an underlying linking logic, which in turn gave rise to further questions, also addressed in the broader political economy and sociological literature: How does capitalism continue to expand beyond its apparent, or given, limits? Where do new commodities come from? How do pre-existing social patterns persist and reassert themselves in the face of change?

The answers I found to these questions then made it possible to address newer questions arising in the scholarly and policy fields in more recent years, such as: What are the forces driving globalisation? How can the geography of the new global division of labour be explained? How can the 'knowledge economy' be defined and measured and what is its relationship to the rest of the economy? How do new occupations emerge, how are they shaped by past patterns and what forms of social groupings, or regroupings do they lead to?

The nineteen items which are collected here and detailed on pages 16-17 span a period from 1978 to 2007 and chart the development of a conceptual framework which makes it possible to address such questions. For ease of reference, these items are referred to alphanumerically, with those collected in the book *The Making of a Cybertariat: Virtual Work in a Real World* referred to as numbers 1a-1l and the remainder as numbers 2-9. Additional references are listed on pages 17-19 and a full bibliography of my work is provided in Appendix A.

Items 1a and 1i discuss the context in which this work was produced, attempt to identify its sources and describe its evolution over the years.

The components of this explanatory framework are presented here as ten separate, though necessarily inter-related, theses. Rather than duplicating arguments which are presented in greater depth in the items submitted, or repeating the narrative of their production (which is already included in 1a and 1i), I have attempted in this covering document to supplement them by drawing attention to the intellectual origins of these ideas and to draw attention to the common threads of argument.

Thesis 1: The process of commodification underlies changes in the technical and spatial division of labour.

Although the German language has no direct equivalent for the word 'commodification' the concept derives from Karl Marx, who, in the opening words of *Capital* states that:

'The wealth of those societies in which the capitalist mode of production prevails, presents itself as "an immense accumulation of commodities", its unit being a single commodity. Our investigation must therefore begin with the analysis of a commodity.

'A commodity is, in the first place, an object outside us, a thing that by its properties satisfies human wants of some sort or another. The nature of such wants, whether, for instance, they spring from the stomach or from fancy, makes no difference. Neither are we here concerned to know how the object satisfies these wants, whether directly as means of subsistence, or indirectly as means of production' (Marx, 1867, p1)

Implicit in Marx is the notion that the process of capitalist development does not rely on a static stock of existing types of commodities which, whilst purchased for their 'use value' are also 'the material repositories of exchange value' (*ibid*), but, as a result of the imperative to expand which is a characteristic feature of capitalism, also involves the generation of new commodities. This implies a process which can be designated by the verb 'to commodify'.

Harry Braverman describes what he calls the 'extension of the commodity form' to create a 'universal market' (Braverman, 1974 pp 271-283) with reference to the mechanisation of agriculture and the shift of the rural population to the cities in the USA in the 19th and 20th century, in a manner which draws attention to the sectoral shifts which accompany this process and the impact on workers' skills. He also applies this analysis retrospectively to the British Industrial Revolution, drawing on the work of E.P. Thompson (1963). This analysis was influential in the development of 1b, my first formulation of the notion that commodification could be seen as the underlying process that explains historical shifts in the division of labour.

In this process a number of changes take place: work previously carried out without pay in the home, or as domestic service, is transformed into paid work; service activities are rationalised and become the basis of new goods; further rationalisation introduces new divisions of labour within the manufacture of goods and their distribution, giving rise to new business service activities which themselves become subject to yet more rationalisation; the consumption of these increasingly complex goods and services in turn creates new forms of 'consumption work' which further change the labour processes involved in unpaid work. In other words changes in the organisation of work can be regarded as part of larger processes of deconstruction and reconstruction at the level of sectors, occupations

and labour processes as well as in the social division of labour. Technology plays a key enabling role in this process but does not drive it.

The ideas first put forward in 1b are further developed explicitly in 1c, 1f and 1j but they implicitly underpin most of the other arguments presented in this collection of items.

I define the commodification process as the tendency of capitalist economies to generate new and increasingly standardised products whose sale will generate profits which increase proportionally, relative to the scale of their production. Commodity production differs from craft production in which - assuming a constant level of craft skill and a stable market - the profit on each item remains the same regardless of the scale of production. Although the most obvious examples of commodities are mass-produced material objects, according to this definition, services may be commodities too, though some are not (for instance some services may be produced and delivered outside the money economy or within the public sector simply for their use values). The general tendency, however, is for more and more aspects of human existence and of the natural world to become the basis of new commodities, whether this involves the functioning of the human body or mind (for instance by the pharmaceuticals and plastic surgery industries) the diversity of the natural life of the planet (for instance in the tweaking and patenting of plant DNA by the biotechnology industry) or the very functioning of the capitalist system itself (for instance in speculation on futures markets or risk insurance policies or the repackaging and resale of house mortgages or other debts). In this process, even *negative* use values may acquire a positive exchange value, as exemplified in the international trade in environmental emissions following the agreement on the 1997 Kyoto Protocol on Climate Change.

Thesis 2: Commodification relies on the standardisation of processes and takes place within the context of a division of labour which can be characterised as a 'value chain'.

The concept of standardisation is built into this definition of commodification because without standardisation it is impossible to increase profit in proportion to the scale of production (if single hand-crafted items or professional services are delivered individually with no economies of scale in their production, then the value which is added will be the same for each item sold, with no addition produced by economies of scale). This insight can be traced back to the European Enlightenment and the beginnings of economics as a discipline in the 18th century, most explicitly to the work of Adam Smith (1776) three of whose key concepts can be brought together to form the rudiments of a model of value chain restructuring which is still relevant for understanding globalisation in the 21st Century. These are the concept of the *division of labour*, the concept of the *theory of value* and the concept of *comparative advantage*. In the 19th century, all of these theories were refined by David Ricardo (1817) and the first two developed further by Karl Marx (1867).

Smith, in introducing the concept of the division of labour, speaks of 'great manufactures ... destined to supply the wants of the great body of the people' being broken down into 'branches' which may be geographically spread, making the division of labour 'not near so obvious' and 'less observed' than if it all takes place in a single 'workhouse'. Giving the example of pin manufacture, he speaks of the 'business' being broken down into 'trades' which in turn involve the performance of several different 'operations', some of which may be performed by several different 'hands'. Such a division of labour is always, in his view, accompanied by an increase in productivity.

'The division of labour, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labour. The separation of different trades and employments from one another seems to have taken place in consequence of this advantage.' (Smith, 1776: Book 1, Chapter I).

Three reasons are adduced for this: the greater dexterity of a highly specialised worker, the saving of time that would otherwise be spent in transition from one activity to another, and technologies which 'facilitate and abridge labour and enable one man to do the work of many' (*ibid*).

The value which is added by any given worker, or group of workers, in this process is also explicitly discussed by Smith, as is the need for managerial control of the workforce,

'The value which the workmen add to the materials, therefore, resolves itself ... into two parts, of which the one pays their wages, the other the profits of their employer upon the whole stock of materials and wages which he advanced. He could have no interest to employ them, unless he expected from the sale of their work something more than what was sufficient to replace his stock to him; and he could have no interest to employ a great stock rather than a small one, unless his profits were to bear some proportion to the extent of his stock.' (*ibid*: Book 1, Chapter VI).

Smith is clear that the value of a final product is not just constituted by the added value of each stage of the manufacturing process but also includes value added by inputs of services:

'In the price of flour or meal, we must add to the price of the corn, the profits of the miller, and the wages of his servants; in the price of bread, the profits of the baker, and the wages of his servants; and in the price of both, the labour of transporting the corn from the house of the farmer to that of the miller, and from that of the miller to that of the baker, together with the profits of those who advance the wages of that labour' (*ibid*: Book 1, Chapter VI).

Smith also explicitly links the division of labour to regional competitive advantages (such as the presence of raw materials, a climate suitable for certain crops, proximity to rivers and ports etc.) and, hence, concludes that, since it is only trade between regions that can deliver the full advantages of the division of labour 'the extent of the division must always be limited by ... the extent of the market' (*ibid*: Book 1 Chapter III). He also notes the differences in wages and other costs between regions (*ibid*: Book 1 Chapter X Part 1) and even the ways in which regional differences in labour costs may be affected by public policy.

'The policy of Europe, by not leaving things at perfect liberty, occasions other inequalities of much greater importance.

'It does this chiefly in the three following ways. First, by restraining the competition in some employments to a smaller number than would otherwise be disposed to enter into them; secondly, by increasing it in others beyond what it naturally would be; and, thirdly, by obstructing the free circulation of labour and stock, both from employment to employment and from place to place.' (*ibid*: Book 1 Chapter X Part 2)

Ricardo refined this theory of comparative advantage to show that it is the *relative* cost advantage rather than the *absolute* one that makes it profitable to introduce an international division of labour.

'Under a system of perfectly free commerce, each country naturally devotes its capital and labour to such employments as are most beneficial to each. ... It is this principle which determines that wine shall be made in France and Portugal, that corn shall be grown in America and Poland, and that hardware and other goods shall be manufactured in England...

'If Portugal had no commercial connexion with other countries, instead of employing a great part of her capital and industry in the production of wines, with which she purchases for her own use the cloth and hardware of other countries, she would be obliged to devote a part of that capital to the manufacture of those commodities, which she would thus obtain probably inferior in quality as well as quantity.' (Ricardo, 1817: Chapter 7).

Here we have in a nutshell a model which is still highly relevant for the analysis of corporate sourcing strategies. 'Businesses' are broken down into separate 'trades' or 'branches' (which might also be termed 'functions' or 'processes') which are in turn subdivided into 'operations' (which might also be termed 'subprocesses' or 'tasks') which may in turn be carried out by different specialist 'hands' (or 'workers') using specific labour processes. The more specialist this division of labour is, and the more it can be automated, the greater is the value that is added in any given 'operation'. Provided that constraints on the movement of capital can be resolved and markets are able to operate freely, it is profitable to introduce a spatial dimension to this division of labour so that advantage can be taken of the comparative cost advantages of particular regions. All these interconnected processes which contribute to the whole business (which can be called a 'value chain') have to be centrally managed by what Smith calls 'the employer' (but which might also be called the 'enterprise', 'firm', 'corporation' etc.) in a process which might now be called 'value chain governance'. I have discussed this concept, developed by Gereffi et al (2005) in some depth in Huws (2006) and Huws et al (2008) but it is also summarised in item 4.

This model underlies much of my work and is presented most explicitly in 3 and 4, but also in 1j and 1k.

Thesis 3: The rationalisation and standardisation which is necessary for commodification to take place in turn relies on the codification of workers' knowledge.

In order to enable standard commodities to be produced, it is necessary for standard labour processes to be developed. These are brought into being by making explicit the implicit skill or 'craft' used by workers to create these products or services so that it can be embodied in standard procedures or mechanised. This insight can be traced back to the end of the 19th century in the work of Frederick Taylor for whom a functional approach to the analysis of the division of labour played a crucial role in the development of his 'principles of scientific management' (Taylor, 1911).

Taylor, like Smith before him, emphasised the importance of managerial control of the workforce arguing that a clearly defined division of labour was fundamental to achieving the improvements in productivity he sought:

'The management must take over and perform much of the work which is now left to the men; almost every act of the workman should be preceded by one or more preparatory acts of the management which enable him to do his work better and quicker than he otherwise could.' (*ibid*, Introduction)

For Taylor, the basic unit of analysis was the *task*. Indeed, he went so far as to say that 'every single act of every workman can be reduced to a science.' (*ibid*, Chapter 2)

'Perhaps the most prominent single element in modern scientific management is the task idea. The work of every workman is fully planned out by the management at least one day in advance, and each man receives in most cases complete written instructions, describing in detail the task which he is to accomplish, as well as the means to be used in doing the work. And the work planned in advance in this way constitutes a task which is to be solved, as explained above, not by the workman alone, but in almost all cases by the joint effort of the workman and the management. This task specifies not only what is to be done but how it is to be done and the exact time allowed for doing it.' (*ibid*, Chapter 2).

Harry Braverman documented the use of Taylor's scientific management approach in the USA over the ensuing six decades (Braverman, 1974, pp 85-121) and its extension from the factory to office work (*ibid*, pp 124-137) and introduced the concept of 'deskilling' as an essential component of this process, showing the ways in which the tacit knowledge of workers, as expressed in their labour processes, could be captured by managers, analysed, standardised and mechanised to create simplified processes that could be carried out by less skilled workers.

As well as contributing to my conceptual framework, this work influenced me in the design of a number of empirical studies of the effects of technological change on work, especially office work, carried out from 1979 to the present day (see, for instance, Huws, 1982, 1984, 1992, 1993, Huws, Honey & Morris, 1996, Huws & O Regan, 2001, Huws & Flecker, and Huws 2004, 2005 and 2008). The model I use, which is presented in different ways in 1e, 1i, 1k, 3 and 4, posits a sequential process whereby: first, workers' tacit knowledge is made explicit and codified; second, this codification allows for a standardisation of tasks; third, this in turn makes it possible for outputs to be measured; fourth, once this has taken place, workers can be managed by results; and fifth, this in turn makes it possible for the work to be reorganised, either spatially (by relocating it to another site) or contractually (by outsourcing it) or both. Work processes are, in effect, modularised, and this modularisation makes possible a wide range of different spatial and contractual permutations and combinations: aggregation or disaggregation; centralisation or decentralisation; labour processes based on single tasks or multiple tasks. Some of these different forms of restructuring are summarised in a diagram which is presented in item 2 in the form of a four cell matrix in which spatial integration and separation is cross-tabulated with contractual integration and separation. Items 3 and 7 discuss the spatial relocation of work which forms one dimension of this matrix, illustrating not only the diversity of forms that this may take but also the different motives for relocation that may exist and, in the case of 7, the different meanings assigned to 'telework' in different historical and social contexts.

This process can be referred to as the restructuring or elaboration of value chains, but it cannot take place without the codification of knowledge in the first instance.

Thesis 4: This process has a dual impact on skills - a simultaneous creation of high-skilled jobs for some and deskilling of other jobs, eroding or destroying traditional occupational identities and generating new ones.

Braverman himself (*ibid*, p 124) speaks of the 'separation of conception from execution' as the key feature of scientific management, although in his general analysis he emphasises the 'degradation' of the jobs of the majority of workers due to deskilling, rather than focusing on new skilled jobs which are created as a result of the increasingly elaborate division of labour which results from this process. Whilst they may well be fewer in number than those that are 'degraded' I have argued that it is important to be aware that every change in the division of labour involves a dual process in which as one set of jobs is rationalised, standardised and simplified or automated, new jobs requiring creativity and/or new skills are created connected with the design, implementation and management of the new processes. Even highly standardised jobs (e.g. in call centres) may require levels of skill and knowledge which draw intensely on the worker's own emotional and intellectual resources.

'Skills' are socially constructed, being rewarded on the labour market as a result of negotiations between workers and employers in which gains are made by workers on the basis of how well they are organised and how successfully they have in the past managed to restrict access to these 'skills' rather than the intrinsic difficulty of executing the tasks in question. Skills which women are required to exercise in the home without pay have no scarcity value and are therefore under-rewarded on the labour market, as are skills that have been made universally available throughout the population through the public education system. This makes the concept of 'deskilling' problematic to apply. Some of the gender aspects of this problem are discussed in items 1b, 1g and 9. Items 2, 5, 6 and 9 discuss the transformation or destruction of older occupational identities.

Item 6 argues that the drive to universalise 'e-skills' and 'digital literacy' serve the same function as the introduction of compulsory elementary level education in the '3 Rs' in the 19th century by devaluing these skills on the labour market and creating a reserve army of 'knowledge workers'. Simultaneously, of course, like the 3 Rs before them, they become a functional necessity.

We can conclude that the impacts of these processes on skills are complex. Some groups of workers (those whose tacit knowledge has become incorporated into new machinery, standardised processes or databases) can be regarded as having been deskilled in a classic Taylorisation process. Meanwhile, other new high-skilled functions have been created, for those who design, adapt and maintain the new products, services or systems, provide content, manage the workforce, or mediate the increasingly complex value chains that are created. The extent to which these jobs are recognised, and rewarded as 'skilled' will, however depend on a range of

factors including the scarcity of these skills, the gender of the workers concerned and their ability to develop collective identities and organise to bargain with their employers.

Thesis 5: These changes in occupational identities create major challenges for class analysis.

Occupational identities form the building blocks for class identities, both objectively (e.g. in the use of occupational statistics by sociologists) and subjectively. They also constitute the basic elements of the collective identities which provide the foundation for the development of collective organisations such as trade unions, guilds or professional associations which can represent the interests of groups of workers in relation to employers, the state or other groups of workers.

However the destruction of many traditional occupational categories, especially in manual occupations, and the creation of large numbers of new jobs that might loosely be defined as 'white collar' has made most traditional methods of assigning workers to classes extremely difficult, if not impossible, to apply.

In keeping with the functional approach to modelling value chains adopted in my work, my starting point for class analysis has been a functional one. The sources of this approach can also be dated back to the 18th century, in the work of Francois Quesnay, in France, who developed the idea of a national economy as consisting of the sum of *flows of inputs and outputs* of goods and services traded between industries and produced a prototype flow table for the French economy (Quesnay, 1758), a remote ancestor of the input-output tables which now form part of the national accounts of most countries.

This concept of flows was also used for modelling the inter-relationships between different units in the division of labour: each unit in Quesnay's scheme is seen as receiving *inputs* (in the form of raw materials, goods or services), either from an external source or from another unit within the business to which it *adds value* before transmitting it in the form of an *output* either to another unit or to an end customer.

In order to produce this model, Quesnay analysed the economy distinguishing between activities that produced value (in 'the productive sector') and those that did not (in 'the sterile sector') and breaking down the population into generic classes. Three basic groups are identified: farmers, landlords and artisans, but the division of labour in his model introduces additional categories: labourers, who add value by making inputs of labour, and merchants, who provide the means to make inputs of foreign goods and raw materials. These groups are generic in the sense that they are defined only in terms of their function in the economy, not in terms of the particular products or services they grow, make or trade in, or the types of property from which they receive rent. My concept of the 'generic business function' (described, *inter alia* in items 3 and 4) can be traced back to such an approach.

The concept of classes defined in terms of their functions in the economy was developed further by Karl Marx, who also adopted a functional approach to his analysis of the division of labour and insisted on the contributions to the production

of value of all those workers, whether manual or non-manual, who are involved in any way in the production of any given commodity:

'..the different labour capacities which cooperate together to form the productive machine as a whole contribute in very different ways to the direct process by which the commodity, or, more appropriate here, the product, is formed, one working more with his hands, another more with his brain, one as a manager, engineer or technician, etc., another as an overlooker, the third directly as a manual worker, or even a mere assistant, more and more of the functions of labour capacity are included under the direct concept of productive labour, and their repositories under the concept of productive workers.' (Marx, 1861-64 - emphasis in the original)

Here too the functions are described in generic terms, following Smith and Ricardo. Although the differentiation is greater than in Quesnay (not least, perhaps, because of the technical advances in production that had taken place in the meanwhile) because of the primary focus on the general relationship between capital and labour there is less emphasis on the interrelationships between firms and sectors, an aspect of Quesnay's approach which, as developed in my work, is particularly useful for conceptualising contemporary value chain restructuring at an economy-wide level, but not so useful for studying class as a social relation.

Max Weber defined class in a manner that appears on the face of it not dissimilar to Marx's approach, stating that:

' We may speak of a 'class' when (1) a number of people have in common a specific causal component of their life chances in so far as (2) this component is represented exclusively by economic interests in the possession of goods and opportunities for income, and (3) it is represented under the conditions of the commodity or labor market.' (Weber, 1948, p. 181)

However he asserted that 'there is no economic determinism of community - contrary to the assumption of so-called historical materialism' whilst conceding that 'some generalizations can be advanced about the manner in which economic interests tend to result in social action' (Weber, 1914, I.i.3). Rational, instrumental economic motivation, in his view, did not provide a full explanation for human behaviour, since other forms of motivation, could result in the formation of other forms of social grouping or 'status community' (*ibid*, I.i.11), organised on the basis of common religious affiliations, race, ethnic identities, consumption patterns, family ties, tribes, clans or bands (*ibid*). This suggests, at the very least, that the formation of class identity is a complex process and could not simply be 'read off' from a person's position in the technical division of labour, even if that position were a stable one (which, the evidence suggests, is by no means the case, especially during periods of rapid restructuring in which job descriptions are highly volatile).

Item 2 summarises the results of some empirical work I carried out (Huws, 2005) which demonstrates that even national statistical offices have found no effective way to classify jobs in the 'new economy' by occupation. Item 1k discusses a range of analytical approaches to assigning a class position to office workers and concludes that a traditional Marxian approach is inadequate. One problem is created by the fact that most approaches assign a single class position to an entire household ignoring the reality that the gender division of labour in the paid workforce means that co-habiting men and women usually occupy very different occupational positions that are likely to be coded differently, under neo-Marxist, neo-Weberian or bureaucratic classification schemes. A second, and even more intractable, problem is created by the fact that in globally distributed value chains

workers who share the same labour processes, work for the same employers and have the same functional relation to capital are nevertheless likely to be found occupying very different status positions in their local social environment. National differences play an important role too, in creating very different objective positions for the same occupational groups in different contexts. However racism and ethnic identities also create barriers to developing subjective common identifications.

The item concludes that it is necessary to draw on Weberian, as well as Marxian, approaches to understand the class positions of emerging occupational groups.

Thesis 6: the outcomes of changes in the division of labour are socially and politically shaped and heterogeneous.

The dual processes of deskilling and skill creation combine with the difficulty in reading off class mobility from occupational change to make it extremely difficult to interpret data on employment change. It is also important to distinguish jobs themselves (and any changes that make take place in the skills required to do these jobs) from the people who occupy them.

Not only are firms, sectors, labour processes and skills undergoing change; there is also increasing mobility within the workforce in most advanced economies. Whether the changes in work represent a deterioration or an improvement for any particular worker or group of workers depends in part on the previous experience of the people entering these transformed jobs. A clerical job, for instance, will be experienced very differently by someone with expectations of professional or managerial employment than by someone coming from a background in manual work or from unemployment.

There are thus a number of factors which may affect the outcomes and how they are experienced. These can be related both to the individual characteristics of workers and to the institutional and economic environment which shape the quality of work. They include: the workers' 'place' in the local social hierarchy (which is in turn shaped by gender and ethnicity); conditions in the local labour market (which are also historically shaped), the national and regional institutional context; prevailing patterns in the division of unpaid labour; and the extent to which the occupational groups to which the workers belong (or belonged in the past) have been successful in developing strong collective identities, restricting access to membership and negotiating with employers (and also, in some cases, with state agencies, such as bodies awarding qualifications).

Item 2 illustrates these difficulties in relation to some case studies (carried out with the assistance of Simone Dahlmann). Several other items in this collection including 1d, 1g, 1l and 9 also discuss ways in which the quality of employment and the value that is assigned to it (and of course to the workers who carry it out) are socially shaped.

One important aspect of this shaping is the interplay between change and inertia: just because something can be changed does not necessarily mean that it will be, and the balance between the generation of new patterns (whether

structural, cultural or institutional) and the reassertion of old ones adds another dimension to the heterogeneity of change patterns and the extent to which any given set of outcomes may be predicted with confidence.

The national environment plays an important role here. Despite strong homogenising tendencies associated with globalisation, it is clear that 'country still matters' and that changes in the spatial and technical division of labour will take different distinctive forms in differing national contexts. Item 1e is an example of an early analysis of the new global division of labour in white collar work. Much of my subsequent empirical research has been concerned with mapping and measuring the geographical dimensions of this new global division of labour in 'information work' (see, for instance, Huws, 2003, Huws and Flecker 2004 and Huws, Flecker and Dahlmann, 2004). Item 8 summarises some conclusions from this research, drawing attention to the persistence of national differences, not just in a region's ability to attract new forms of outsourced employment but also in the specific forms that this employment takes in different contexts.

It should not, however, be assumed that these national differences will remain constant. Actors in national economies actively engaged in competitive strategies in a constantly changing environment, with nationally based corporations contesting their positions in the value chain and seeking to gain higher proportions of the value added (discussed in 4). It is also the case that national institutions are increasingly challenged by global forces and detailed analysis is necessary to model the interactions between global forces and national institutions in any specific context. Item 7 discusses some of the strains that are put on national social protection systems in Europe by the development of an increasingly global economy and the flexibilisation of employment. This too builds on my previous empirical and theoretical work (see, for instance, Huws, 1995, 1996, 1998 and 2005b).

The conclusion that location still matters leads to the further conclusion that public policy can make a difference.

Thesis 7: Technology is a key enabler of these changes, but does not inevitably determine them.

Technological change plays a crucial role in the change processes outlined above. Technological innovation generates new commodities (which may be entirely new commodities, designed to meet needs that were previously met through the provision of services or outside the money economy, or may replace or upgrade older commodities already existing in the market). Technological innovation may also take the form of innovating processes, for instance through the mechanisation or automation of functions previously carried out in more labour-intensive or hazardous ways. Information technology has also facilitated the development of global production chains and global markets through miniaturisation: increasing the ratio of embedded knowledge to weight in products and thus making them lighter and easier to transport. Information and communications technologies in combination have enabled the infrastructure that has made possible the extension of a global division of labour in work involving the processing of digitised information.

Technological change thus underpins the whole commodification process, the changes in labour processes and occupational structure which result from the application of product and process innovations, the sectoral shifts which result from this and the creation of a global market information services. The role of technological change in the commodification process and its impact on skills is presented schematically in a diagram in 1f.

Technology is discussed in many of the items submitted, including 1d, 1e, and 1h. 1i summarises some of the sources, work including critiques of technological determinism, that influenced me in arriving at the conclusion that technology does not take a single inevitable form but is socially shaped - and, indeed, contested - by the historically-formed character of the institutional context and by the power relationships between the social actors involved, including the agency of workers and their representatives and the strategies of their (increasingly global) employers.

Thesis 8: Changes in the division of labour in the formal economy are integrally linked with the division of labour in unpaid work.

The starting point for my first thesis was the proposition that one of the factors that has enabled capitalism as a system to survive so successfully is its remarkable ability to generate new commodities. This commodification process enables it repeatedly to draw new aspects of nature or fields of human activity into its scope, rendering them into reproducible objects of exchange. Human needs do not, of course, come from nowhere, and some of the most productive sources of new commodities are those activities which are still conducted outside the money economy for what Marx would have called their 'use value'.

Unpaid household work forms part of this sphere of activity that lies directly outside the market. However, as argued in 1a and 1b, when it becomes the basis of new service industries or new manufactured goods the unpaid labour that formerly went into producing it in the home does not disappear but is transformed in nature into other kinds of labour which I have described as 'consumption work'.

Changes in the nature of service work (in which the productivity of workers is increased by transferring as many tasks as possible to the consumer) and in the complexity of manufactured goods (requiring increasing interaction between manufacturer and consumer in the form of 'customer service') have increased the amount of consumption work in proportion to the extent to which domestic life is dependent on the consumption of commodified goods and services.

Item 1l brings the wheel full circle describing the contestation of time that results in consumption work in new telemediated sectors of the economy such as call centres.

It can be concluded that changes in the technical division of labour are intimately linked with changes in the social division of labour and that it is impossible to understand the dynamics of change in either without taking account of their mutual interactions.

Thesis 9: The 'knowledge economy' can best be understood as an effect of the general elaboration of the spatial and technical division of labour.

Putting together the insights from the previous eight theses makes it possible to develop an integrated model of the division of labour, both paid and unpaid, across a whole economy and to understand the dynamics of changes within this division of labour as effects of commodification.

This in turn makes it possible to view the so-called 'knowledge economy' or 'information economy' not as some new domain but as a group of economic activities previously compacted within anterior tasks that are made separately visible by the elaboration of the division of labour in the rest of the economy, more specifically as an effect of the spatial and contractual restructuring of value chains.

Such an analysis also makes visible the dependence of these 'knowledge' sectors on other sectors in the economy producing material goods and physical services thus demonstrating that they are not autonomous. This analysis, most explicitly made in 1j (published in 1999) made it possible to predict the bursting of the 'dot-com bubble' at the turn of the 21st century (by demonstrating this interdependence between the 'real' economy producing physical goods and services and the 'virtual' economy providing information-based business services to the other sectors). It is also described in 3 and 4 and has provided the conceptual underpinnings for a considerable amount of my recent empirical research (see, for instance, Huws, 2003 and Huws, Flecker, Ramioul and Geurts, 2008).

Thesis 10: This analysis has implications for how future research should be designed and conducted.

The previous nine theses suggest that many of the concepts and statistical categories used in conventional economic and sociological analysis are inadequate for modelling and measuring change. Concepts like the 'sector', the 'occupation' or even the 'firm' cannot usefully be used for measuring change - either longitudinally (over time) or comparatively (between countries) - when these units of measurement are themselves in a process of transformation.

In order to measure change (and hence test the theses put forward above) it has therefore been necessary both to develop new (and more historically stable and internationally comparable) units of analysis and to disaggregate some of the existing units of analysis. At the macro level (for instance to measure the relocation of work across national borders) the new unit of analysis I have proposed (and which has now been tested not only in my own surveys but in surveys by EU member states and the US Government and in work by the OECD) is that of the 'generic business function'. This is a unit that refers generically to a particular business function, such as design, production, sales, data processing etc. without reference to the sector of activity or the occupation of the workers involved (although, of course, it can be cross-tabulated with these). To analyse organisational restructuring (and hence sectoral change), the unit of analysis

proposed is that of the value chain, conceived as a series of inputs and outputs which, in combination with the concept of the business function can be triangulated with information from national accounts to measure changes in trade both between sectors and across national borders.

At the individual level, an analytical breakdown of traditional occupational identities into their component parts has been carried out, so that the place of work, the use of technology, the degree of seniority and other features of any given job can be separated and cross-tabulated to measure change across any of these dimensions and develop new typologies of employment.

I have written widely on such methodological issues (see for instance Huws, 1988, 1990, 1996b, 1999, 2002, 2004). Among the items submitted, 4 and 3 give the most complete summaries of these issues.

Contribution to knowledge

I have attempted wherever possible in this analysis to trace the origins of my ideas back to their source, either in the political economy literature of the 18th and 19th centuries or in the founding literature of sociology. My work also owes a great deal to a large number of other sources, as detailed in 1a and 1i, many of which are acknowledged in individual items. This exercise in intellectual archaeology has been carried out in order to attempt to position my work in a broader history and assess how it has added to existing knowledge. I believe its main value has been to bring together insights from political economy, sociology and feminist theory into a single coherent framework which has made it possible to develop research on changes in the global division of labour in a manner that then makes it possible to address questions raised from several different disciplinary perspectives (for instance economic geography, organisational theory, gender theory, labour sociology, communications studies, urban studies, industrial relations etc.).

It is difficult to assess the impact of a body of work carried out over four decades but I believe my work to have been influential in a number of fields. Perhaps the best indicators of this are the extent to which my work has been translated and reprinted in anthologies, citations, research which has been based on my conceptual framework, usage of terms which I have coined and requests for contributions both to scholarly conferences and publications and to policy statements, reports, seminars and brainstorming sessions. These are too numerous to catalogue here so I will just offer a few examples.

The book submitted here (1a-1l) has been published in its entirety in Korean, with further publications planned in Portuguese (by Boitempo) and Chinese (by the Beijing University Press). However most of the articles in it have been republished in other anthologies and translated into other languages, including French, German, Italian and Turkish. It is also published in an Indian edition. Most surprisingly, 1b, originally written in 1978, was published as current feminist theory in Turkish in 2007, nearly four decades later. Items 5 and 6 have, to my knowledge, been translated into Swedish, Turkish, Korean and Portuguese and 7, which originally appeared in Italian, has also been published (in English) in Bulgaria

as well as in Germany. Item 9 has been published in French as well as English whilst 2 will be published in French and Portuguese as well as English.

Over the years my work has been taken up in different ways in different fields. During the 1970s it contributed to the development of what was to become a new field of gender and technology studies. My work on the spatial division of labour led to a large body of work on teleworking (a word I coined in 1982 but which has now crept into common usage) during the 1980s and 1990s and, from the mid 1990s onward to the study of what became known as 'offshore outsourcing'. This influence has not been restricted to drawing attention to new concepts and developing theoretical frameworks within which to study them but has also been methodologically innovative. My insight that teleworking could not be defined in an absolute sense but should be seen as the intersection of different variables (including the place where work was carried out and the use of technology) led to the addition of new questions in the UK Labour Force Survey which have now been adopted in many other countries. Similarly the use of the concept of the 'business function' for understanding and measuring value chain restructuring has led to its use in a number of business surveys carried out by National Statistics Offices including the European Outsourcing Survey, the US Mass Layoff Statistics and a major forthcoming survey in North America.

Although most of it was produced outside formal academic environments, my work is cited extensively in scholarly publications. A search for 'Ursula Huws' in Google Scholar carried out on August 4th, 2008, threw up 643 references whilst a more general search on the same date for 'Ursula Huws' in Google produced 'about 58,000' hits. The more selective Cuil (a search engine which produces no hits at all for many academics, even those who are reasonably well published) produced 9,335 hits. This suggests a reasonably broad impact.

My underlying theoretical model has been acknowledged as having influenced their ideas by a number of distinguished scholars. To illustrate the geographical and disciplinary range I give just three examples here all involving well-known public intellectuals: Colin Leys a political scientist and emeritus professor at Queens University in Ontario, Canada, has applied my concepts of commodification and 'consumption work' in his work on the commodification of public services (Leys, 2001); Krishna Kumar, Director of the Indian National Council of Educational Research and Training in Delhi has said that he regards my work on the codification of skills as having made a significant contribution to the philosophy of knowledge (private communication, 2007) and has cited it widely (see, for instance, Kumar, 2007) as well as setting up an 'Ursula Huws study group'. Ricardo Antunes, Professor of Sociology of Labour at UNICAMP in Brazil, has adopted my concept of a 'cybertariat' and took the initiative to raise money to translate my book into Portuguese and approach Boitempo to publish it in Brazil. I have also been offered visiting professorships in a number of different countries including Brazil, Australia, Sweden and Germany but have only been in a position to accept one such invitation (at the Institute of Political Economy at Carleton University in Ottawa, Canada for one semester in 2005).

My work has also been influential outside the academic field. As well as contributing to the development of new types of NGOs (including the Trade Union and Community Research and Information Centre, which I co-founded in Leeds in 1976 and was the first of its kind, the still-thriving Women Working Worldwide of

which I was a founder member and the, also still successful, National Group on Homeworking of which I was also a founder member) it has contributed to the development of policy both nationally and internationally. For example my work on teleworking and homeworking contributed to the development of international guidelines by the ILO and European Commission for good employment practices and the development of a Homeworking Convention by the ILO and a Social Partnership Agreement on the topic by the EC. My work on the health hazards of VDUs contributed to the development of the WHO guidelines on VDT use and my policy paper for the European Commission in the follow-up to the 1992 Delors White Paper on Employment (Huws, 1993) was the first to draw attention to the tension between the aim of flexibilisation of labour markets on the one hand and avoidance of social inclusion on the other and drew attention to the need to find a new balance between flexibility and security. This gave rise to a series of publications (for instance Huws, 1995, 1996 and 1998) which prefigured the current European debates on 'flexicurity'.

Publications submitted for this PhD

1. *The Making of a Cybertariat: Collected Essays by Ursula Huws*, Monthly Review Press, New York and Merlin Press, London, July, 2003 (208pp), comprising:
 - a. Introduction
 - b. Chapter 1 'New technology and domestic labour'
 - c. Chapter 2 'Domestic technology: liberator or enslaver?'
 - d. Chapter 3 'Terminal isolation: the atomisation of work and leisure in the wired society'
 - e. Chapter 4 'The global office: information technology and the relocation of white-collar work'
 - f. Chapter 5 'Challenging commodification: producing usefulness outside the factory'
 - g. Chapter 6 'Women's health at work'
 - h. Chapter 7 'Telework: projections'
 - i. Chapter 8 'The fading of the collective dream: reflections on twenty years of research on women and technology'
 - j. Chapter 9 'Material world: the myth of the weightless economy'
 - k. Chapter 10 'The making of a cybertariat: virtual work in a real world'
 - l. Chapter 11 'Who's waiting? the contestation of time in the service economy'
2. 'Global restructuring of Value Chains and Class issues', (with Simone Dahlmann) in proceedings of ISA Conference: *Work and Employment: New Challenges*, Montreal, August 28-30, 2007. This will be republished under the title 'New forms of work; new occupational identities' in N. Pupo and M Thomas (eds.) *Interrogating the 'New Economy': Restructuring Work in the 21st Century*, Broadview Press, Peterborough, Ontario (in press).

3. 'The emergence of EMERGENCE: the challenge of designing research on the new international division of labour' in Huws, U (ed.) *Defragmenting: towards a critical understanding of the new global division of labour, Work Organisation, Labour and Globalisation Volume 1 No 2*, 2007, pp 20-35
4. 'The restructuring of global value chains and the creation of a cybertariat' in May, Christopher (ed.) *Global Corporate Power: (Re)integrating companies into International Political Economy* (International Political Economy Yearbook volume 15), Lynne Rienner Publishers, 2006, pp 65-84
5. 'Fixed, Footloose or fractured: work, identity and the spatial division of labour' in *Monthly Review*, Vol. 57 No 10, March , 2006, pp 34-44
6. 'What will we do? The destruction of occupational identities in the Knowledge-based Economy', *Monthly Review*, Vol. 57 No 8 January, 2006, pp 19-34
7. 'The Restructuring of Employment in the Information Society and its Implications for Social Protection' in Bechman, G., Krings, B-J and Rader, M (eds.) *Across the Divide: Work Organization and Social Exclusion in the European Information Society*, Campus Frankfurt/M, Frankfurt, 2002, pp 139-152
8. 'The Persistence of National Differences in the New Global Division of Labour in eServices' in proceedings of conference *Globalisation, Innovation and Human Development for Competitive Advantage*, Asia Institute of Technology, Bangkok, December, 2002, Vol. 1, pp 1-10
9. 'The Changing Gender Division of Labour in the Transition to the Knowledge Society' Rubenson, K. and Shuetze J.G (eds.) *Transition to the Knowledge Society: Policies and Strategies for Individual Participation and Learning* UBC Institute for European Studies, Vancouver, 2000, pp 341-355

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- Huws U. (1996b) *Teleworking: an Overview of the Research*, Joint publication of the Department of Transport, Department of Trade and Industry, Department of the Environment, Department for Education and Employment and Employment Service, London.
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- Huws U. (2005) 'Coding and Classification of Sectors and Occupations in the E-Economy' in *Measuring the Information Society*, Huws, Ramioul and Bollen (eds.) K.U. Leuven Press, Leuven.
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Appendix A: Bibliography of publications by Ursula Huws

note This list of publications is as comprehensive as I can reasonably make it but does not include relatively trivial items such as reviews or conference papers which I do not record systematically. Neither does it include material on topics unrelated to this PhD (such as text for exhibition catalogues, school text books etc.). However it does include some research reports which had a fairly restricted circulation because of the relevance of their empirical content. Publications are listed in reverse chronological order. For the sake of comprehensiveness, publications by me which are referenced in this document and listed on pages 16-19 are repeated here.

Forthcoming

'New forms of work; new occupational identities' in N. Pupo and M Thomas (eds.) *Interrogating the 'New Economy': Restructuring Work in the 21st Century*, Broadview Press, Peterborough, Ontario

The Making of a Cybertariat (Portuguese Edition), Boitempo, São Paulo

The Making of a Cybertariat (Chinese Edition), University of Beijing Press, Beijing

The globalisation glossary: a researcher's guide to understanding work organisation restructuring in a knowledge-based society, Catholic University of Leuven Press, Leuven

'The new gold rush: corporate power and the commodification of public services; introduction' in Huws, U (ed.) *The new gold rush: corporate power and the commodification of public services; introduction Volume 2 No 2*

'The restructuring of work in a global economy; dimensions of labour in the 21st century' in Giovanni Alves (ed.) *Proceedings of VI Seminar of Labour: Trabalho, Economia e Educação no Século XXI*, State University of São Paulo Press, Manilia.

2008

'Break or Weld: trade union responses to global value chain restructuring; 'introduction' in Huws, U (ed.) *Break or Weld: trade union responses to global value chain restructuring, Work Organisation, Labour and Globalisation Volume 2 No 1*, 2008, pp 1-10

Value chain restructuring in Europe in a global economy, (with Jorg Flecker, Monique Ramioul and Karen Guerts), Report from the WORKS project, Higher Institute of Labour Studies, Leuven, 2008

Changing patterns of segregation and power relations in the workplace (with Simone Dahlmann and Maria Stratigaki), Report from the WORKS project, Higher Institute of Labour Studies, Leuven, 2008

Managing Change in EU Cross-border Mergers and Acquisitions (with Brie O Keeffe), European Foundation for the Improvement of Living and Working Conditions, 2008, available online on:

<http://www.eurofound.europa.eu/emcc/content/source/eu08005a.htm?p1=reports&p2=null>

2007

'The restructuring of work in the information society and the implications for social protection', *Sociological Problems*, Special Issue, Bulgarian Academy of Sciences, 2007, pp 31-43

'Global restructuring of Value Chains and Class issues', in Proceedings of ISA Conference: *Work and Employment: New Challenges*, Montreal, August 28-30, 2007

'Defragmenting: towards a critical understanding of the new global division of labour; introduction'; in Huws, U (ed.) *Defragmenting: towards a critical understanding of the new global division of labour, Work Organisation, Labour and Globalisation Volume 1 No 2*, 2007, pp 1-4

'The emergence of EMERGENCE: the challenge of designing research on the new international division of labour' in Huws, U (ed.) *Defragmenting: towards a critical understanding of the new global division of labour, Work Organisation, Labour and Globalisation Volume 1 No 2*, 2007, pp 20-35

'Women, Participation and Democracy in the Information Society' in Shade, L. R. and Sarikakis, K. (eds.) *Feminist Interventions in International Communication: Minding the Gap*, Rowman and Littlefield, Lanham, Maryland

'The Snowball effect: Global sourcing as an accelerator of economic globalisation', (with Monique Ramioul) article submitted for *Journal of Architectural and Planning Research*, theme issue "Work beyond Boundaries" (under review)

'Sunset in the West: Outsourcing editorial work from the UK to India' (with Simone Dahlmann), in Huws (ed.) *The Spark in the Engine: Creative Workers in a Global Economy, Work Organisation, Labour and Globalisation* Vol. 1 No 1, 2007

'The Spark in the Engine' in Huws U. (ed.) *The Spark in the Engine: Creative Workers in a Global Economy, Work Organisation, Labour and Globalisation* Vol. 1 No 1, 2007

'Teknoloji ev isini azaltir mi?' in Hazirlayanlar et al (eds.) *Kadinlar yoksullarin en yoksulu, emekcilerin de kolesi, Pazartes*, Istanbul, 2007, pp 62-69

'O que mudou foa a divisao do trabalho', *IHU Online*, Sao Paolo, 23 Abril, 2007 available online on http://www.unisinos.br/ihu_online/uploads/edicoes/1177359728.74pdf.pdf (pages 28-31)

The Transformation of Work in a Global Knowledge Economy: Towards a Conceptual Framework: conference report, (with Dahlmann, S. and Dudhwar, A.), HIVA, Leuven, 2006

2006

L'industria dei call center: quando il lavoro diventa bad job
(with Marco Zanotelli) in *La Voce*, 4 November, 2006

'Globalisation and the restructuring of value chains' (with Monique Ramioul) In: Huws U. (ed.) *The transformation of work in a global knowledge economy: towards a conceptual framework*, WORKS project, Higher Institute of Labour Studies, Belgium, p.13-27

Begging and Bragging: the self and the commodification of intellectual activity, inaugural professorial lecture, London Metropolitan University, June, 2006

'Fixed, Footloose or fractured: work, identity and the spatial division of labour' in *Monthly Review*, Vol. 57 No 10, March, 2006

'Rotfast, rotlöst eller splittrat' in *Kors & Tvärs* edited by Gunnarsson, E., Neergaard, A., and Nillson, A., Normal Förlag. Stockholm, 2006

'What will we do? The destruction of occupational identities in the Knowledge-based Economy', *Monthly Review*, Vol. 57 No 8 January, 2006

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O que faremos nós? A destruição da identidade ocupacional na 'Economia baseada no conhecimento', in *Resistir*, January, 2006

'The restructuring of global value chains and the creation of a cybertariat' in May, Christopher (ed.) *Global Corporate Power: Global Corporate Power: (Re)integrating companies into International Political Economy* (International Political Economy Yearbook volume 15), Lynne Rienner Publishers, 2006, pp 65-84

2005

'Coding and Classification of Sectors and Occupations in the E-Economy' in *Measuring the Information Society*, Huws, Ramioul and Bollen (eds.) K.U. Leuven Press, 2005

Measuring the Information Society, (editor, with Ramioul, M. and Bollen, A.) K.U. Leuven Press, 2005

Offshore outsourcing of business services, (with Ramioul, M. and Kirschenhofer, S.) European Foundation for the Improvement of Living and Working Conditions - European Monitoring Center of Change, Dublin, 2005

The Challenges confronting Welfare Systems in Europe and how ICTs can help solve them LAW project report August, 2005

Labour Market Changes and Welfare Perspectives in the EU: a Review of the Evidence LAW project report March, 2005

e-Government, Work and Welfare in Europe: Case Studies from France, Germany, Italy and the UK, LAW project report, October, 2005

ICT-related Skills and Lifelong Learning: case studies from France, Germany, Italy and the UK (ed.) LAW Project report, October, 2005

eGovernment: ICTs Improving Welfare Deliveru in Europe (ed.) LAW Project Briefing Paper, September 2005

eLearning for Social Inclusion (ed.) LAW Project Briefing Paper, November, 2005

Labour Market Changes and Welfare Perspectives in the EU, LAW final project report, December 2005

2004

Status Report on Outsourcing of ICT-enabled Services in the EU, (with Flecker, J and Dahlmann, S.) European Monitoring Centre on Change of the European Foundation for the Improvement of Living and Working Conditions, 2004

Socio-Economic Research in the Information Society: a User's Guide from the RESPECT Project, IES Report 416, Institute for Employment Studies, 2004

An EU Code of Ethics for Socio-Economic Research, (with Dench, S. and Ipophen, R.) IES Report 412, Institute for Employment Studies, 2004

Professional and Ethical Code of Conduct for Socio-economic Research in the Information Society, RESPECT Project, 2004

Opening the Black Box: Classification of Sectors and Occupations in the eEconomy, (with van der Hallen, P.), Higher Institute of Labour Studies, K.U. Leuven, 2004

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