

In Search for Innovative Work Organizations in Transition

Papers presented as
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Kenneth Abrahamsson, FAS
Mats Engwall, VINNOVA (Eds.)



WORK-IN-NET

Labour and innovation: Work-oriented innovations – a key to better employment, cohesion and competitiveness in a knowledge-intensive society



Content

1	Preface	5
2	Foreword	7
3	Research into Division of Labour and Work Organisations	9
3.1	Introduction	9
3.2	The problem area	9
3.3	The reference point: the organisational level and organising	10
3.4	The history and modern roots of organisational science	11
3.5	The programme The New Division of Labour – standpoints and plans	12
3.5.1	Organisations and organising in the centre	12
3.6	Findings and challenges.....	13
3.7	Time	14
3.8	Space	15
3.9	Intermediaries	16
3.10	Rhetoric.....	16
3.11	Gender	17
3.12	Continued work and study object – in short.....	17
4	New Forms of Work Organisation for Sustainable Development.....	19
4.1	Where we are.....	19
4.2	...and where we're going	20
4.2.1	From continual disappointments to the high road of sustainable development.....	24
4.2.2	Studying sustainable development - a research proposal.....	26
4.3	Concluding discussion.....	27
4.4	References.....	28
5	Innovative Work Organisation for Flexibility, Sustainability and Labour Productivity	30
5.1	State of the Art in this Field, in Practice as well as in Theory	30
5.1.1	"Deteriorating Swedish Work Environment – a Threat to the Future of Swedish Industry"	30
5.2	The future of Americanisation	31
5.3	Organisational implications for how to foster innovative work organisations: From rhetoric to results	33
5.4	References	34
6	Evolving Needs of Organisational Change and Individual Sentiments	36
6.1	Introduction	36
6.2	Nature of mainstream processes of organisational change.....	37
6.3	The complexity of learning and innovation	38
6.4	Interface between knowledge creation and use	40
6.5	Concluding remarks	42
6.6	References.....	42
7	Participants at the Dublin workshop	44
8	The Project Consortium.....	45
9	Impressum.....	46

1 Preface

The present brochure “In Search for Innovative Work Organizations in Transition” is part of an European project that brings ministries and funding agencies of several European countries and regions together. The brochure contains the discussion papers for a meeting that was realized on March 23 to 24, 2006 in Dublin.

The purpose of the project titled “WORK-IN-NET” is to stimulate the networking of research activities for creating an European Research Era. “WORK-IN-NET” stands for: Labour and innovation: Work-oriented innovations – a key to better employment, cohesion and competitiveness in a knowledge-intensive society. The WORK-IN-NET comprises of 14 partners from 8 European countries. Additionally, 5 institutional partners from 4 countries, 2 European institutions and 2 European networks are associated to the network. WORK-IN-NET is supported within the ERA-NET scheme in the context of the Sixth Research Framework Programme (2002-2006) of the European Commission.

The overall objective of the ERA-NET scheme is to step up the cooperation and coordination carried out at national and regional level in the Member States. Thus, the aim of WORK-IN-NET is to build up sustainable communication and cooperation channels in Europe between the still fragmented national and regional research activities in the area of work-related innovation issues. Information is also shared with other member states of the EU where innovative work organisation is less advanced in order to contribute to reducing the economic and social differences between north and south, and Eastern and Western Europe.

I would like to thank especially NCPP for hosting this meeting and all contributors for their stimulating input to this brochure.

Claudio Zettel

WORK-IN-NET Coordinator

Project Management Agency at DLR, Project Management Agency of BMBF, Germany

2 Foreword

WORK-IN-NET is a consortium of R&D financiers in EU-countries with common interest and programme initiatives concerning innovative work organization, social inclusion and business development. Its purpose is to exchange good practices, evaluation methods, and forms of dissemination concerning the field of innovative and inclusive work organizations as well as possible joint calls in the future (www.workinnet.org).

WORK-IN-NET will bring representatives of business, labour market organisations and public bodies as well as representatives from the research communities in all partner countries together. Within the work package on information exchange the three selected thematic issues will be decided upon in detail and working and task groups (WTG) on these themes established. This workshop aims at a qualified and policy oriented discussion concerning theories, development and comparative approaches to workplace innovations at the levels of workplace, firm and regional corporate networks.

As part of the preparation for the Dublin Workshop on *Innovative Work Organizations in Transition* (March 23-24, 2006), the Swedish WIN-partners FAS and VINNOVA organized a seminar together with as part of the Swedish National WIN Forum on March 7, 2006. The purpose of the seminar was to scan and develop fields of joint calls in a European setting. In addition to the four papers presented in this report, papers on gender issues, on discrimination at work as well as innovation studies will be enclosed in the report. Furthermore, a summary of the Dublin meeting will be used in the report as well as some post-seminar reflections. The papers presented in this report are working documents and should not be disseminated outside the WIN-environment before the final report has been prepared. We hope that this initiative will help us to clarify the role and future orientation WORK-IN-NET. Let us also add that the ideas and viewpoints of the authors do not necessarily correspond with policies and ideas of the WIN-partners or other agencies in the field.

Stockholm February 17, 2006

Kenneth Abrahamsson
Programme director FAS

Mats Engwall
Head of work development unit, VINNOVA

3 Research into Division of Labour and Work Organisations

Eskil Ekstedt and Elisabeth Sundin, National Institute for Working Life.

3.1 Introduction

This is a short version of a paper relating to a programme to be implemented over the next few years, covering research into work and organisations and the division of labour conducted by the National Institute for Working Life, Sweden. The research is organised as a programme named The New Division of Labour (NDL or in Swedish DNA – Den Nya Arbetsdelningen) Over the past year an interdisciplinary research group has been conducting a knowledge review and also instigated exploratory studies. A suggestion for continued research for the NDL-programme has been formulated and is here presented shortly.

The introduction to the paper is a presentation covering the apparent areas. Thereafter follows an argument for choosing the organisational level as a starting point in order to gain knowledge of the dimensions of the new division of labour. This is followed, in the Swedish programme, by a chapter covering developments within industry, industrial and consumer related services respectively. In this paper this part is reduced to a few lines allowing for proposals covering continued work in this field to be presented.

3.2 The problem area

Over the last few decades the economy has undergone a dramatic structural transformation which has affected the type of work as well as where and when people actually work. This transformation has not only influenced individuals and how work is organised but has also affected work conditions developed in the work place. The number employed in traditional industrial workplaces has dropped over the years whilst expansion is taking place in the supportive business service sector. Industrial work methods have been automated, jobs have disappeared through rationalisation or moved to other regions or countries. The shifts between branches and sectors influence the forms of organisations, the work itself and the working conditions. How this influence looks like is still an open question.

Even the public sector has changed direction and organisation. The care sector is experiencing re-organisations and job cuts with some traditional care tasks being moved from the public sector to the private sector or in some cases even back to the families. The educational system is in change as well. Ownership of schools is being moved out of the public sector – and sometimes, back again. In the case of university education, a geographical change has been noted. An increasing number of universities and colleges have been established throughout the country. The organisational changes of the public sector are likely to have an impact on the working conditions for many persons. But how remains to find out.

Changes also take place within the same sector occurring between various organisations. This is clearly visible when businesses as well as the public sector prefer to outsource products rather than produce their own.

The transformation within many organisations is also of importance. It is now apparent that a concentration to core competence is preferred in many organisations. A

widespread use of temporary organisational solutions is reported. Other internal organisational changes are manifested in profit centres and nudge the boundaries relating to revenues, costs, supervision and control.

On the whole it can be claimed that a new division of labour is being formed. Clear indications of this are visible on an aggregate level through the movements occurring between the sectors and occupations, on a middle level where new relations between organisations have emerged and on a lower level with the redistribution of work within organisations. This has also spatial dimensions through the relocation of operations as well as being expressed temporarily in the time when the work is actually carried out. Division of labour manifests itself in actors, groups and individuals. The gender division of labour which involves both vertical as well as horizontal dimensions is an example of the relationship of relevance and importance. Within organisation research from the gender perspective, the sex or gender is often seen as something that creates and is created within organisations. The gender dimension exemplifies why it is necessary to speak of labour markets in plural rather than a single labour market.

Changes occurring on all three levels – aggregate level between sectors and occupations, the middle level and the internal organisational division of labour – affect working conditions in many respects; such as influence, leadership, knowledge acquisition, work time, work-load, contracts and health. The description and interpretation of the development is very complicated as they would appear to be contradictory. Some spectators have witnessed improvement, others a deterioration and yet others a polarisation. How development is viewed in both the wider and narrow perspective is still an open empirical question. It can be so that in some areas work conditions at a specific workplace have deteriorated over the last few years, whilst at the same time development within the overall division of labour has benefited growth of other types of operations and that relative work conditions have improved. The problem areas must be treated with an open mind. The intention with this proposed research is to continue accumulating knowledge relating to the changes that occur within the occupational and working life from an organisational viewpoint with the aim of further highlighting issues of relevance to work organisations and the new division of labour.

3.3 The reference point: the organisational level and organising

Research into working life in Sweden has been of great benefit within the area of occupational health. From this perspective, focus is placed on the outcome of organisational changes without scrutinising the characteristics of the organisations. Changes of the character of work relating to sector and business movements are often only referred to in a manner in which organisations are treated as a “black box” - without form or content. Another popular area over the last few years is leadership. Descriptions and images relating to this subject are often influenced by the American perception which is often normative and focuses on the managers rather than those being managed. Our conclusion is that research into working life has not been capable of capturing the complexity characterised by occupational and working life which is now materialising as a result of the overall changes occurring in production conditions and market requirements. Therefore any conclusions concerning for example, changes in work conditions are brief. These viewpoints need to be complemented, which we are doing in the programme The New Division of Labour.

The organisational form and other organisational characteristics are important for the way work is designed. Organisations and the organising *per se* therefore require further study and need to be scrutinised by focusing on the transformation within the

modern economy and the way in which work has been organised, both within the organisations, for example, work places, as well as between them seen from a national and international perspective. In this way the development of work can be placed in a wider context and the understanding and preparedness for adjustments can be improved – thus creating the right conditions for acting preventatively and in a long term.

The choice of the concept “working life” (arbetslivet) or “economic life” (näringslivet) reflects the different angles and focus of interest. However, the same organisations make up working life as well as economic life. With this point of view in mind, the public sector should also be regarded as part of the economic life. Therefore it would suffice to use the concept “organisation/s” as a generic concept both for the public as well as for the private sector instead of the word “company” for the latter. When we use the concept “organisation” as the smallest unity of analysis we are not excluding the common concept, working place. In many cases the “working place” could be the natural unit of reference, but the term organisation is to be preferred as it also includes temporary, non-stationary organisations. The latter forms of organisations seem to be of special interest when trying to understand the development of modern working life.

The concept “organisation” implies a formal structure – something fixed and in place. Whereas in this programme it is the word organising that is the more relevant. Organising is a continuous process created by the environment and internally through interpretation and action. Functional changes and interplay within an organisation must be highlighted. How organisations change, that is to say, the actual process of organising an operation must be studied and understood.

It is important to assess which type of movement and direction will leave a scar in the working life. There is a tendency in general to over-value certain short-term expressions whilst at the same time underestimating other long-term tendencies. For example, the so-called new economy at the end of the 1990’s gained much attention in a hysterical way whilst the slow introduction of automation in the forestry industry, which had profound effects on employment and working conditions throughout most of the country, was hardly remarked upon. It is therefore vital to evaluate those tendencies which leave deep, long-term scars in working conditions. A reference point could be to relate rhetoric to experience. Even if the largest research endeavours must be referenced in experience, in other words to try and gain a picture of how work organisations in different parts of the economy transform in time, it is also important to pay attention to rhetoric as talk is sometimes action.

3.4 The history and modern roots of organisational science

The term division of labour has surfaced in social as well as economic debate ever since the emergence of the industrial era when, amongst others, Adam Smith and Karl Marx, both well-known far beyond their own fields, displayed special interest in this phenomenon. The idea of the division of the meaning of labour – “the new division of labour” – for our welfare system and work situation has its roots in the thinking of classical economists and philosophers. The expression is used to describe both the distribution of various types of occupations or professions, which in turn are reflected in different community groups (the societal/social division of labour), whose distribution of work occurs in and between individual work places, which is the industrial division of labour. Contrasts between industrial and societal/social division of labour were noted early. A long established division of labour in a factory, governed by narrow efficiency thinking can be in contradiction to the social division of labour which

emphasises human values. Some attention was also given to the gender-based and international division of labour. Those forms of division of labour already mentioned are also highly present in today's working and economic life. The term division of labour is so broad that it covers a number of levels within the organisational transformation, which is a recurring theme in this programme.

Meticulous studies relating to internal work organisations were carried out as far back as at the 19th century (Babbage). However, the most famous is Frederick Taylor's study, which resulted in the book "The Principle of Scientific Management" dating from 1911. This and many other studies were the basis for a school of thought that had enormous effect on the whole of the 20th century. During the 1930's, researchers carried out detailed experiments of various aspects of work at the Western Electric Company, the so-called Hawthorne studies (Roethlisberger & Dickson, 1930; Elton Mayo, 1945). This was the origin of the Human Relation School. Empirical studies were also carried out by the Sociotechnical School at the beginning of the 1950's and involved experiments and deep case studies of a large number of companies. Famous reports include Eric Trist's Organizational Choice from 1963 and Fred Emery's Systems thinking from 1969. The basis for this research, work and work organisations, has since been generalised and still influences thinking today.

However, since the 1970's organisation research has not conducted systematic studies of work, which the two American researchers, Stephen Barley and Gideon Kunda, amongst others, have clearly shown in an article entitled "Bringing work back in" (2001). In their opinion, concrete studies of work organisation should be included in order to be able to understand and build theories relating to organisations. This development and reasoning also apply to Swedish organisational research (Bäckström, 1999). Both Barley & Kunda as well as Bäckström mean that organisational research from the 1970's has moved from studies relating to work – which can be seen as the fundament of organising – to studies on learning, group-dynamics, discourses and rhetoric about organisations. This attitude originates from the post-modern organisational theory and various philosophical trends with little interest in work and organisations. School-book organisational literature is totally lacking in conflict dimensions whilst the rational decision-making norm is emphasised (Martin & Collinson 2002). This leads to unproblematised advice and solutions with little credence in reality (Czarniawska 2005). Work organising does involve both intra – and inter organisational relations and new organisational forms which are included in the concept division of labour in its broadest term.

3.5 The programme The New Division of Labour – standpoints and plans

3.5.1 Organisations and organising in the centre

Our programme takes its starting point on the organisational level of working and economic life. The arguments are obvious: Decisions are made within the organisations which later become regarded as trends at all levels. These decisions result in globalisation, outsourcing and re-organisation, with closures and dismissals as a result. Decisions made within organisations lead to unemployment, stress and burn-out. However, it is also within the organisations that decisions relating to full-time recruitment, employee office parties and pleasure in work take place. Decisions made at national or EU level are applied and implemented through organisational decision making. It is, therefore, within the organisations that work is fashioned, where the content of work is expressed and people are able to improve and develop. Organisa-

tions are in the end nothing more than groups of people driven by individual and shared ambitions, visions and goals.

When using the word “decision”, this is not solely related and limited to decisive decision-making by a person in authority, but also includes all those interpretations and decisions, which on the surface may seem to be small and insignificant, made on the spur of the moment by members of an organisation with the intention of furthering the operations and processes whilst at the same time realising their own ambitions.

3.6 Findings and challenges

We find some observations concerning organisations and organising of great importance both for the understanding of working life and economic life of today and for the formulation of the programme. As crucial observations we find that the boundaries and characteristics of traditional organisations are challenged by:

- systems and clusters
- temporary organisations
- reduced spatial constraints
- dependency between public and private sector
- small businesses as a means of flexibility for larger organisations
- increased standardisation and regulation

In summary, it can be established that knowledge within many areas is uncertain. The reasons go back to observations and can be summarised as follows:

- Changes within certain dimensions are of importance – what was true yesterday is not necessarily so today.
- The development is irregular, which in turn affects the account and result of where the studies were conducted.
- Ideology sometimes hides facts that some accounts and conclusions may have more to do with desire than with reality.
- The eye of the beholder gives often priority to familiar interpretations, e.g. classification based on an earlier division of labour.

Boundary changes, which separate the economic operations in time and space, can serve as a method for understanding how work is formed. The following will attempt at summarising some organisational development tendencies which have been observed in relation to how time and space have been utilised. It is reasonable to assume that a change in the usage of work time may have a more direct effect on work conditions than spatial movements, such as cluster formation and outsourcing, which perhaps affect access to jobs of a particular type in a particular place. These types of changes are of such a special nature and dimension, that traditional mechanisms and organisations have difficulties in managing them. New, intermediary organisations are born. Therefore those organisations which deal with actual adjustment will be given extra interest.

During the planning phase, special interest has been directed towards the extensive rhetoric discourse, which emphasises the time and spatial aspects investigated by, amongst others, the media. Studies have also been initiated in the relationship between the changes in the division of labour and gender. Below the main areas are presented.

3.7 Time

The continued study into time is based upon two important conclusions. The first one is the idea that time is limited and a critical resource. There is a dominating idea in present-day public debate in general and in strategic analyses of organisations in particular. The need to minimise the usage of this resource, time, to increase the inner efficiency, is continuously being reinforced in today's commercial businesses. It is especially visible in the financial markets whereby investors put priority on safe returns within the foreseeable future rather than more uncertain returns in the future. The behaviour, sometimes named "quarterly capitalism" will probably lead to more restrictive long-term investment and knowledge development. This "time minimisation concept" has also spread to the public sector organisations and to those operations previously governed by other criteria.

Time regimes are not only governed by new criteria but also by traditions, values and norms in various cultures and societies. This leads to the question of how time is viewed and how the institutional forces, which steer actions based on different time perspectives, influence organisations, individuals as well as their decision processes. Those driving forces which are for, respectively against, continued focus on time efficiency require study. If development continues in this direction, it is vitally important to understand the affect this has on work and work conditions in the organisations in general and how it influence individuals and groups in the organisations, but also outside the labour market.

Prioritising time efficiency actualises the question of whether this is something new. The agrarian society did not clearly define work time and leisure time – all time was potential work time. In today's organisations there are signs that this view is being revived. Perhaps a variant of the view, relating to time, held by the agrarian society, will re-emerge whilst industrialism's view concerning work time will become mere incidental in the economic history.

Another issue involves the broadening of project-organised operations. Are they going to increase or decrease in the future? Will sectors not at present affected by project organising, such as the care sector and schooling, be influenced? Will work, work conditions, compensation models and employment conditions be influenced? How division of labour between organisations will be affected by project organising in the future is also an issue. Will specialisation and organisation via network and project increase? And if so, how will that affect work and work conditions and division of labour for example in relation to gender dimensions?

How work time is organised is of paramount importance to the workers' entire life. In various Swedish organisations, time regimes are introduced. Some have been studied during the past year and will be further developed. Opinions held by the workforce relating to the so-called 3+3-system were, for example, conspicuously positive. However, insecurity relating to other matters, for example the internal organisational conditions and relationships, remained. The 3+3-system was tested within a number of public-care-sector organisations with a 24-hour open policy.

For certain operations, time can form part of the actual business idea. Long opening hours are used by some companies in the retail trade to attract customers. This idea can essentially only be used by large companies. Small shops can not afford the extra money paid to employees working inconvenient hours.

Other time aspects have emerged during the studies conducted on executors within the public sector. Time limited contracts appear to be a hindrance mainly to the small

organisations. It is not unusual to find that small businesses have difficulties in following time regulations relating to the labour market. In conclusion, it is obvious that time, even in the future, will be a key dimension for research in the programme.

3.8 Space

There are many contradictions in the spatial dimension of the new division of labour. The picture presented by the media is that the relocation of jobs from Sweden to other countries is extensive. However, the picture given by existing statistics is more modest. This discrepancy has a number of explanations. One is that the overall national figure in the statistics does not give a fair image of local or organisational effects. A phenomenon can deeply affect a neighbouring community or sector and gain much interest, whilst having very little effect on the national figures. Another explanation can be related to the methods at present used when collating statistics, which do not reflect the true extent. Some of the above-mentioned discrepancies can also include some rhetorical aspects – there are a number of actors involved in this debate who possess strong personal interests.

Another conclusion, or rather hypothesis, concerning the spatial studies is that the “system approach” or “cluster formation” is very much a question of creating a “picture”. Marketing becomes central. To appear to be “innovative” and forward-thinking seems to be as important as producing a credible result. Difficulties in “making a system” are great – this is a further lesson to be learned. The importance of involved individuals and the patience necessary for slow growing forms of cooperation are general lessons.

Delineating a cluster or system is to a great extent a matter of distance – a distance with clear gender dimensions. One of the basic ideas behind system thinking is that movements of employees within a system contribute to faster knowledge development and an innovative organisation. This is of special relevance when issues relating to uncoded or tacit knowledge are exposed and presented as being important factors. A central issue concerns the balance between co-operation and competition between organisations.

If knowledge held by the individual is not capable of being coded or specified and placed into various types of collectives or “communities” beyond formal, legal organisational units, what then is the use of framing questions relating to competence development within the labour market? These discussions have much in common with the area of project organisation (Ekstedt et al., 1999) and the ideas of individualisation and “employability” presented by Garsten and Jacobsson (2004). They pursue the opinion that knowledge formation, which is described as a fundament in today’s working life, is a matter for the individual. It is not the responsibility of society to create jobs, rather for the individual active in the labour market to continuously improve in order to be employable. Another central issue for the programme concerns the trade unions’ organisation strategy concerning issues relating to the individualisation of the labour market and competence development (Huzzard). The issue of learning in working life takes on a whole new meaning when seen through the eyes of local and regional labour markets.

The effects of moving jobs (outsourcing) and system approaches/clusters can create homogenous labour markets – a kind of specialisation in space. Specialisation in association with, for example, the gender-divided labour market has not as yet been mapped. It has already been established that the official cluster politics produced by Vinnova, ITPS and SNS lack insight into the labour market gender regimes, which

has consequences for the type of new enterprise which is promoted. (Lindberg, 2004)

3.9 Intermediaries

The new division of labour manifests itself through and within organisations. In certain cases they bear the characteristics of intermediaries and step forward when existing organisations are unable to carry out the new tasks. Mediators are therefore visible proof and representatives of the new. They are key organisations in order to understand the new division of labour.

As can be seen in the first study concerning labour market intermediaries, it is possible to expand the study of intermediaries to also include other sectors of the economy. In a market perspective it is possible to imagine that when a new institutional opportunity is created, the existing established actors are not always able to cope and deal with these opportunities – this creates an institutional vacuum. Intermediaries are supported by different institutionalised constructions. It is therefore a matter of an organisational division of labour pertaining to different guidance systems. There are authoritative intermediaries, such as Invest in Sweden Agency, whose role is that of intermediary between companies looking to establish themselves in Sweden, and Exportrådet, who provides practical advice in moving to Sweden. Market intermediaries are, for example, IT companies interested in selling IT services from Swedish companies to production plants in Eastern Europe, China and India. Another example of market intermediaries is net-based companies who assist individual consumers in assessing offers to buy music on the net.

During the last 15 years, a number of different intermediaries became established in Sweden to manage the Swedish labour market. These include global recruitment agencies, state-run out-placement consultants, regional private job centres, various job employment security councils, web-based service functions and organisations' own internal recruitment agencies. The solutions involved are market, authority, contracted and "in-house". Various cooperation constellations abound and institutional constructions are many. In many cases, the intermediaries cut straight through established categories, such as private-public and employer-employee.

Intermediaries manifest a new organisational division of labour. If this means a new way of conducting work, this is paramount to the continuation of this project. Actual dimensions are foremost, those mentioned earlier such as space, time, gender and ethnicity, but also forms of contract such as steer and control systems, etc.

3.10 Rhetoric

The new division of labour is described in various ways and on a number of different occasions. The studies already carried out have concentrated on how and where a number of centrally placed expressions regarding time and space are used in the Swedish daily and business newspapers. A number of important conclusions can be drawn. One is that certain discussions are limited to a social sphere – for example, only to research – whilst others are visible everywhere, both amongst prominent creators of public opinion and in letters to the editor page.

It is intended that, also in the future, rhetoric will remain a part of the studies concerning the new division of labour. "Talk" is sometimes the same as action, and rhetoric sometimes leads to practice and vice versa. In the chapter relating to cluster formation, this was illustrated and the same experience can be gained concerning the debate on time. Rhetoric is used by many actors from different perspectives and to a

varying degree of intention. This will be further developed in the context of the programme.

3.11 Gender

Gender division of labour is one of the labour market's basic features and is reflected, created and creates organisational gender division. The relevance of this in today's Swedish work and business life have only been superficially touched upon in discussions relating to time and space as mentioned above. It appeared that gender division of labour involves shared schedules, and so-called "unsocial" working hours are classed as women's hours – or was it the other way around? It was further noted that commuter distance is not the same for women as for men, and a specialist cluster is gender-labelled and its spatial distribution is different for women and men.

Whether these new intermediaries involve anything new in this respect remains to be studied. Project organisation has so far not unearthed any qualities which go against existing gender dimensions. The same applies to other angles of approach where the need for candour relating to empirical variations in continued studies should be sought.

Within local and organisational interpretations, similar questions relating to ethnic and gender dimensions can also be raised. International division of labour has specific ethnic qualities associated with gender labour of division. What central question should be raised regarding continued research project and study object?

3.12 Continued work and study object – in short

The basis for research concerning the new division of labour is a lack of fundamental knowledge relating to how the development of the modern work and economic life organisations influence work and working conditions. A greater insight into how the division of labour between various types of organisations manifests itself in relation to how individual organisations change will increase the opportunity to influence the individual's situation in the working life. The first step therefore, based on the organisational level, is to contribute such knowledge.

- During the coming year, the studies will be intensified into the new division of labour, based upon those dimensions of time and space mentioned above; this involves both mapping and categorising in order to understand the extent of the transformation, as well as case studies to understand the content of the transformation. A combination of qualitative and quantitative studies makes it possible to relate internal organisational changes to shifts between different kinds of organisations. A deeper understanding of what changes are most important for the character of work can appear.
- In order to gain a deeper insight into the organisational qualities, the studies will be carried out involving many different types of organisations. This means that traditional areas, such as the manufacturing industry, retail trade, care sector and educational organisation, will all be included, but also areas of expansion, such as project-organised knowledge-intensive operations, intermediaries and spatially limited clusters, such as hyper markets and technology villages. With regard to the latter this will include organising *per se* as well as individual organisations as study objects. Cases are chosen from different regions throughout the country as well as internationally.

- Established divisions such as service and industry, national and international, private and public, large and small organisations will be used to gain variety in cases studies. Even if one basic idea is that these divisions can be obsolete and that existing categories can point in the wrong direction, these divisions can serve as a basis for further analyses. Questions and angles of approach emanating from existing statistics shall also be used in the construction of cases.
- In close association with the case studies, analysis and categorisation using existing data bases will also be conducted. Both these approaches will be used to influence one another. Results achieved from such work could create suggestions for alternative or complementary categories.
- International division of labour can be highlighted using organisations involved in the international market, for example, manufacturing businesses and international intermediaries. We will also investigate the international input into local production and marketplaces. International comparisons will be conducted together with international research organisations. This work has already started.
- With a knowledge base in the case studies it is possible to approach research and researchers dealing with the outcome of organisational changes. Of specific interest is the impact of modern organisational forms on health, contracts (formal and informal), knowledge formation and leadership.
- On the whole, these studies carried out on different organisational levels – between sectors, between and within organisations – will provide the foundation to help understand which forces are present in the organisational transformation. Together with the multidisciplinary approach, conditions for theoretical development will be created.

4 New Forms of Work Organisation for Sustainable Development

Tony Huzzard and Peter Docherty, National Institute for Working Life.

4.1 *Where we are...*

As we enter a new millennium, the securing of high employment levels in Europe will depend more than ever on the competitiveness of European firms and the ability of public sector organisations to deliver services that represent value for money. As new countries in Asia become increasingly attractive as locations for producing both goods and certain services, it will be increasingly impossible to defend jobs in uncompetitive European organisations through protective measures. Accordingly, post-Lisbon, we need to refocus the debate on competitiveness in Europe and look seriously at new organisational forms that are not simply a rehash of Tayloristic control technologies. It will not be enough for European firms and public sector organisations to rely on cost leadership alone as a means of remaining competitive.

Increasingly, many researchers in the field of business strategy argue that the key to genuinely sustained competitive advantage is not solely that of adopting the correct strategy (cost leadership or differentiation) but, rather, the capacity to innovate and do new things ahead of rivals (Kay, 1993). This depends on the core competencies of the organisation and these, in turn, rest on the firm's ability to learn collectively as a means of leveraging innovative potential. At the heart of the argument, therefore, for new forms of work organisation in the 'knowledge age', is the need for high levels of competence, high trust and high quality. These are core elements of high performance companies and public sector organisations that have a genuine capacity to innovate and, it is argued, are increasingly becoming the cornerstones of European competitiveness (DTI, 2005). Moreover, the mid-term review of the Kok report on progress towards the goal set by the Lisbon Agenda of achieving full and high quality employment by 2010 highlighted the need for firms to innovate, expand and keep pace with rapid developments in the field of technology. Smarter working, as opposed to harder working, is what will help to close the productivity gap with the US and Asia.

The new forms of work organisation implied here have been discussed by researchers in various terms. In one view, the 'high road' to work organisation has been contrasted with the 'low road' and the 'no road' (Totterdill et al., 2002; Huzzard, 2003). Low road solutions focus on the traditional options in work organisation of cost leadership, speed, and standardisation. These solutions, typically entailing downsizing, rationalisation and excessive zeal for leanness can be contrasted with high road solutions whereby organisational spaces are created that liberate human creativity in ways that achieve a dynamic balance between product and process innovation. The high road consists of more functional flexibility including job enlargement and job enrichment as well as greater autonomy, empowerment and scope for productive reflection (Boud et al., 2005). On the other hand, certain organisations prefer to turn a blind eye to the challenges that face them and make little or no response to change – this is the road to nowhere, the 'no road'.

Others have called the new forms of work organisation 'high performance workplaces' (Appelbaum et al., 2000). Here there is a particular emphasis on the impor-

tance of high levels of employee involvement, innovative work organisation and on training and the development of skills. A clear link is seen between improved quality of work and improved performance. Although the term 'high performance workplaces' is commonly assumed to have originated in the US, much of the foundation work originally took place in Europe, for example early research by the Tavistock Institute in London which looked at firms which had managed to achieve high performance and met the needs of their employees. Yet critics of the 'High Performance Work System' model have argued that although the various human resource and organisational practices it entails may indeed lead to improved performance, this is equally likely to be attributable to increased work intensity as it is to increased involvement, commitment and innovative capacity (Ramsey et al., 2000).

In arguing that innovation is a 'survival imperative', Bessant (2003) has developed an alternative model, that of 'High Involvement Innovation' (HII) as a conceptual tool for understanding new forms of work organisation. He argues that innovation practices should permeate the whole organisation and not be hived off to R&D departments. Accordingly, moving towards higher levels of participation and involvement in innovation processes requires new structures and procedures if it is to be more than wishful thinking. In presenting a model of organisational development along two dimensions – practices and performance – Bessant argues that innovative organisations need to move towards a final stage where innovation becomes the dominant organisational culture.

Another take is that of 'sustainable work systems' (Docherty et al., 2002). Unlike high performance work systems, the notion of sustainability explicitly rules out work intensity as a means to greater competitiveness. Instead it focuses on the requirements for development in the long run. Sustainable work systems are counterposed to intensive work systems. The latter are those that consume resources generated in the social system of the work environment. The interaction between the individual and work has a negative balance between consumption and regeneration and is characterised by exhausted work motivation, stress, long-term sickness absence, ill-health retirement, workplace downsizing and closure. In contrast, sustainable work systems develop by regenerating resources, add to the reproduction cycle and are consonant with long-term convergence between stakeholder interests. The latter point, it seems, does not feature in Bessant's HII model.

4.2 ...and where we're going

The logic for forms of work organisation that promote innovation and learning is thus well documented, accepted by some policy makers (European Work & Technology Consortium, 1997; OECD, 2001), and much work has been done in terms of conceptual development to support the basic argument. Yet the evidence suggests that such views have far from universal acceptance – and we still know relatively little about what it is required for firms to remain competitive over longer periods of time. *Accordingly we urgently need to develop new models for the shaping of company structures and processes over the long run that add value to ensure both the future competitive strength of European firms and public sector organisations that deliver quality services to taxpayers.* Moreover, the focus of such efforts should not only encompass conditions at the workplace, but should also see the employment relationship as being inextricably bound up with external factors. These include the support frameworks of policy makers, the issue of work-life balance and the linkage between value-creation at the workplace with the broader components of social capital.

According to the EU's Expert Group on Flexibility and Work Organisation: 'Models for the future shaping of company structures and organisational competence have become one of the determining factors for the future competitive strength of European enterprises' (Commission of the European Communities, 1995). Yet major EU policy instruments such as the European Social Fund paid little attention to the problematic nature of new forms of work organisation, ignoring the twin threats to employment and innovation posed by the 'low road' of cost-driven change on the one hand, and the 'no road' of inertia characteristic of many companies on the other. At best, EU policy measures supported individuals in developing new competencies relevant to the emergence of new forms of work organisation but neglected the development of the *organisational* competencies which could make full use of the employee's talent and creative potential in the workplace.

However many obstacles across Europe have prevented wider dissemination of what we know about forms of work organisation that foster innovation. In recognition of this, the European Work and Technology Consortium (1995) proposed some ten years ago that priorities for action by public policy makers and social partners should include:

- a clear commitment to 'taking sides' in favour of the high road and against short-term low road approaches;
- the creation of a European public sphere of knowledge, capturing and distributing experiences from workplaces within an integrated process of collective and cumulative learning;
- strengthening 'the third task' of universities, enabling them to provide managers and employees with knowledge of evidence-based practice in more effective and relevant ways;
- building centres of excellence at regional level to promote the development and dissemination of new forms of work organisation;
- encouraging more proactive roles for trade unions and employers' organisations;
- creating more opportunities for inter-company exchanges of experience through the establishment of learning networks.

Much of this remains to be done – but how can we map out a research agenda in more concrete terms? In our view the potential research areas can be roughly clustered as follows:

- 1) Identifying the components of the high road/high involvement/high performance/sustainable workplace (or whatever label we wish to call it);
- 2) Studying how organisations move from the low road to the high road (process aspects);
- 3) The diffusion issue – why knowledge about the high road doesn't diffuse and what we might do to help it do so;

- 4) What's happening in newer, as yet unstudied industries. These may be knowledge intensive, but in many cases some of the newer service sectors are 'low-tech' in nature (Thompson et al., 2000);
- 5) Critical approaches, for example
 - high road rhetoric versus low road reality
 - innovation and involvement as disciplinary technologies
 - the role of gender in innovation processes and practices;
- 6) How to keep going on the high road over the long haul (which may also entail process aspects).

As to point 1 here, this in our view has been researched in reasonable depth, for example the Hi Res Project (a database of over 120 case studies of organisations from six European countries) (Totterdill et al., 2002), the SALTSA Sustainable Work Systems Project (Docherty et al., 2002), the work of Bessant and colleagues at CENTRIM (the University of Sussex) (e.g. Bessant, 2003) and the largely, but not exclusively, US literature on High Performance Workplaces (e.g. Appelbaum et al., 2000). These are considerable literatures and there may not be much new unfathomed here (but see point 4).

As to point 2, this could be considered as the problems of change. But again, a great deal has been done on the change to innovative work organisation specifically (see e.g. Bessant, 2003) and change management in general. Space precludes a full treatment of this literature here, but worthy of a mention is the work of the INNFORM research programme that sought, amongst other things to explore the managerial and organisational processes of moving from traditional forms of organising to forms that support innovation in comparative studies including not only Europe but also the USA and Japan (Pettigrew et al., 2003).

The problems of diffusion – point 3 – were the key focus in the fifth framework Innoflex Project. That project sought to identify the conditions under which convergence can be achieved between the quality of working life (QWL) and competitiveness through the design and implementation of new forms of work organisation and to identify means of reproducing these conditions through the actions of policy makers, public institutions and research institutions (Hague et al., 2003). During the life of the Innoflex project, the significance of inter-organisational learning as a means of stimulating and resourcing the development of new forms of work organisation became increasingly prominent. By the second year of Innoflex, the design, initiation, management and evaluation of networks to promote inter-organisational learning had become the major focus of project activity, testing their effectiveness in addressing the obstacles to workplace innovation identified by a preceding research review. Lessons and outcomes from these networks provided key lessons for actors at European, national and regional levels, as well as for the design of future projects (Docherty et al., 2003).

As to the newer industries suggested in point 4, it is perhaps worth taking a step back from the general argument on innovative forms of work organisation presented at the start of this paper and point out that much of the research to date has had a manufacturing bias. Although there appears to be little dispute that employment in manufacturing has been on the decline over the years and that this will continue, there is an erroneous assumption that what is taking its place is knowledge-based work. As has been argued by Thompson et al. (2000) this is highly questionable – the trend

that appears to be more apparent is that of an increasing level of low-tech service work. If this is true, and the traditional assumption of services being produced and consumed simultaneously still holds, then it cannot also hold that service work can be outsourced to the same extent as that of manufacturing. It is clearly not viable to travel to Mexico for a haircut. On the other hand, it could well be viable for people from Europe to travel to Thailand to purchase high-quality health care. Some services do appear to be moving outside Europe, some do not: there appear to be transaction-cost considerations in terms of spatial location of services. Not all service firms, therefore, will have to compete globally on the same basis as their manufacturing counterparts. Technological change, combined with the global search for low-cost production locations is also ushering an outflow of employment to Asia in a relatively new area of employment – that of call centres (Taylor and Bain, 2004). Even some newer sectors of employment in Europe, it seems, are now ephemeral in nature. But more research is needed on work organisation and innovation in the newly emerging service sector.

In our view, however, the key research issue is that of keeping on the high road once one has found it (point 6). This in essence is a matter of robustness. Innovative (high road) forms of work organisation are not as common in European companies as they are supposed to be: there is a big gap between rhetoric and reality (point 5 above). Even if many companies are applying single elements of new organisational forms there is only a small minority of enterprises that actually shift away from Tayloristic forms of work organisation and opt for high-trust, employee involvement and empowerment (Totterdill, et al., 2002). But even if workplace innovation had taken place, in many cases it is not durable, *not robust*. Research shows that in some cases companies even refrain from new, high road forms of work organisation and return to their old models of production. A main reason for this lack of robustness is the fact that organisational structures might have been changed successfully, but the attitudes, values, theories-in-use, mental maps of the actors (i.e. organisational culture) did not follow. Changes in organisational culture cannot be managed top down: a new culture cannot be ‘implemented’ but has to be introduced through a process of shared learning, in which all actors are given the opportunity to participate not only in the shaping of new organisational structures but have to be involved in the entire cultural change process.

A closely related and highly significant problem is that of ‘innovation decay’ – there is increasing evidence of a high failure rate amongst workplace change initiatives and the underlying causes need to be better understood. The key problem is one of fragmentation. The hardest task for many actors is to see organisations as a whole, and to recognise the interdependence of their different components. Effective organisational change requires a joined-up conception of organisational learning and innovation, not discrete interventions. Change also needs to be built on a long-term view; robust, sustainable workplace innovation depends on dialogue, a strong sense of shared ownership involving all the different stakeholders, the ability to learn from diverse sources, a willingness to experiment and the capacity for continuous reflection and improvement. However more research, especially action-research, is required to identify the conditions within which robust change can emerge.

We need to learn more about how to create the conditions for successful change interventions, and about how to make change stick. This must include measures required within organisations to enhance prospects for successful innovation, but it must also recognise the importance of learning and knowledge exchange within the wider environment.

A number of possible themes for a research programme largely based on point 6 could thus include:

- long term engagement on building and maintaining organisations for innovation. An umbrella concept for this could be "sustainable development" (see conceptual overview below);
- dynamic performance measures (Docherty, 1996) - can we be more specific and develop something more concrete than what's already there?
- roles/types of participation and involvement – for example exploring the complementarities and tensions between direct and indirect forms of participation;
- the high road balancing act, for example the need for *some* low road aspects, static *and* dynamic performance measures, learning through exploration *and* exploitation, change *and* continuity, etc.

4.2.1 From continual disappointments to the high road of sustainable development

When conducting his pioneering work at Corning Glass Works (now Corning Inc.) in the mid-sixties Michael Beer (2002) felt that his team had succeeded in realising the ideas of Douglas McGregor and Frederick Herzberg in their design and implementation of a new work system. Reflecting on the situation at the end of the nineties, he felt that things were worse than they had ever been. He reflects:

“Changing the ‘what’ of job and organisation design does not seem to change the ‘how’ of organisational adaptation. That is, improvements in work systems did not create an underlying capacity in organisations – managers and employees – to adapt to changing circumstances while remaining consistent with the values and principles that gave rise to the innovation in the first place.”

The organisational change process lacked essential prerequisites for sustainability. We maintain that the study of sustainable development is a burning issue in work life research today. Much research in work science and sociology points to important factors that can play important roles in sustainable development. Sustainable development entails a continuous, ever broader, ever deeper evaluation of the current situation and possible needs for change. The breadth of the evaluation relates to the consideration of the currently relevant key stakeholders. Many development models and methodologies in recent years have paid very uneven attention to the needs and ambitions of one or more of the four basic stakeholders, customers, investors, personnel and society.

The depth of the development process refers to the extent to which it engages and develops the actors involved or impacted by the development: are the impacts direct or indirect; do they affect discretion of action, behaviour, attitudes, theories-in-use or values. Researchers such as Snell (2001) and McIntyre (1999) underline the role of values and ethics for the performance of organisations. McIntyre (1999) maintains that the distinctive feature of an “ethical community of practice seeking excellence” is one in which the goods (goals, purposes) attained are internal to the practice (i.e. quality products/service and professional behaviour which have an intrinsic value as “goods in themselves”). These are distinguished from ‘external goods’ such as

money and status. This is of import for the stakeholders, e.g. 'meaningfulness' that, with 'understanding' and 'perceived manageability', form the key factors for employees' sense of coherence (Antonovsky, 1987). An organisation's values and theories in use may be assessed by stakeholders from such documents as value and mission statements, strategy documents, policies and plans and management-union and organisation-partner joint agreements.

The ongoing character of sustainable development entails an extended time horizon – a factor seriously threatened by the IT-based financial markets dominated by large institutional actors. Many companies emphasising such a horizon, avoid or severely limit their involvement in equity markets, e.g. IKEA and H&M in Sweden. The ongoing assessment naturally takes the character of a learning process: action is followed by feedback that is the basis for reflection leading to the formulation of lessons. Organisations can themselves test radical new ideas in a process of 'planned procrastination', generating experience before making major decisions. This can form part of a process of local, culturally adapted experimentation, e.g. with innovations, ideas, methods, originating outside the organisation, the sector or the country. The 'assimilation' of Total Quality Management in Sweden followed such a 'Swedifying' process (Hart et al., 1996).

The work of Pettigrew et al. (2003) on innovative forms of organising is highly relevant for sustainable development regarding the treatment of dualities, e.g. the pressures towards centralisation and decentralisation, and complementarities, when doing more of one thing increases the return of doing more of another. Dualities are co-existing features of the organisation that must be handled and in many cases, balanced.

Docherty (1996) has broached the performance duality concerning performance in stable business processes such as production, developmental processes, such as learning, change and innovation. The formal societal and business interest in performance has been focussed on outcomes that can be strictly expressed in economic terms, sometimes referred to as tangible outcomes. Areas in which outcomes are more difficult to express in economic terms, so-called intangible outcomes, have until recent years received little management attention. Given the attention now focussed on knowledge-based organisations, knowledge work and organisational capabilities, serious efforts have been made to rectify this situation. A first step has been the development of financial indicators of learning and competence development. Pfau and Kay (2001) have shown that human capital investment practices are now a leading indicator of financial importance. 'Good practice' companies clearly out-perform 'poor practice' companies. Specific practices drive shareholder value – others diminish it. The indicators are also integrated, partly in multiple tiers of measurement, partly in bench-marking or -learning designs.

Similar systems have been designed for innovation and development work and are included in balanced scorecard systems, mainly the manufacturing and process industry sectors such as the oil and pharmaceutical industries. Indicators concern such factors as the speed and quality of the development process, the speedy and reliable elimination of non-commercially viable product alternatives. Other indicators concern the rates of diffusion and adoption of new tools, methods and ideas.

Both the development of competences, at the individual and group levels, and the diffusion of knowledge and innovations concern learning within levels and communities in organisations and between levels and communities in organisations., i.e. con-

cerns learning in organisations. Learning is increasingly becoming integrated into work processes in a planned systematic way – it is designed in contrast to evolving or emerging (not that such learning does and will always exist). A specific feature of sustainable development is the design of so-called learning mechanisms, structures and procedures to facilitate, promote and support learning (Shani and Docherty, 2006).

Researchers such as Schein (2004) postulate that an organisation's innovative capacity will increase to the extent that certain conditions hold, for example the environment is perceived as controllable, changeable, manageable, human activity is directed towards problem-solving and improvement, personnel are perceived as being good and capable of improvement, the organisation consists of diverse but interrelated cultures and that it can adjust its information routing and filtering capacity and its total networking capacity.

4.2.2 Studying sustainable development - a research proposal

In terms of a new European-wide research effort, a tentative programme for further research on forms of work organisation for innovation and sustainable development could look something like this:

*** Stage 1**

Revisit and update the Hi Res case studies (Totterdill et al., 2002) – more than 100 were compiled from six countries (as many as resources allow with maybe some new ones to cover other countries). Most of these cases are at least five years old now and one possibility would be to do what Stjernberg and Philips (1984) did in the mid 1980s and assess for stabilisation, progression or regression (and add a fourth possibility – dissolution).

*** Stage 2**

From a robust conceptual framework and fairly structured instruments (which would need input from researchers internationally) it could be possible to construct case histories in connection with each of the case study organisations going back say 7-8 years. This would enable the research team to look at *process* retrospectively and do a detailed comparative analysis. Process was a gap identified by Jan Forslin at the Stockholm seminars – this approach might address this gap (see Huzzard, 2000, for a similar methodology).

*** Stage 3**

Do further process studies longitudinally (over say 2-3 years) in some of the case study firms (the choice would presumably be governed by access), some with an action research component, others without (as a sort of control group). In its choice of organisations, the research team should try to obtain a balance in terms of size and sector. It would then be possible to undertake a further comparative analysis. The intervention tools, building on the Innoflex activities, could include:

- change needs audits;
- identifying obstacles to change and proposing solutions through network dialogue;
- mentoring;
- inter-organisational learning including peer exchange and review;
- evaluation: longitudinal analysis of the impact and sustainability of interventions including the role of support frameworks.

* Stage 4

Repeat the stabilisation, progression, regression, dissolution analysis at the end of the process. Bessant's five-stage model (2003 ch 4, see below) classifying innovation experiences (high innovation performance plotted against high innovation practice) could also be a useful way of assessing progress – this also includes a number of behavioural characteristics which could be looked at. The research gaps that need to be filled are a) that of process: how organisations move through the stages, overcome the obstacles, get to the upper stages and stay there – achieve 'sustainable development' and b) the role of support frameworks.

High involvement innovation – HII (Bessant, 2003)



Level 1 *Precursor* ('natural' or background improvement, ad hoc and short term)

Level 2 *Structured* (formal attempts to create and sustain HII)

Level 3 *Goal oriented* (HII directed at organisational goals and objectives)

Level 4 *Proactive* (HII largely self-driven by individuals and groups)

Level 5 *Strong innovation ability* (HII is the dominant culture – 'the way we do things around here')

4.3 Concluding discussion

Pettigrew et al. (2003) examine the duality 'strategising' and 'organising' – using the verb rather than the noun form, 'strategy' and 'organisation', to attain a more active process perspective. A key process in this context is that of leadership. Leadership is given a specific meaning in innovative organising: it is no longer an issue of managers sense-giving and others sense-taking, but a process of reciprocal sense-making in which managers also enable and support this process. Sense-making proceeds as a strategic dialogue in different arenas. This participative activity should also encompass the collaboration between the members of the organisation and the researchers conducting research *with* them in the organisation. Such research-with has now

many names, such as action, collaborative or interactive research, to mention just three. The research must provide new scientific knowledge for the science constituency and useable, relevant knowledge for the practice constituency. This is often referred to as 'Actionable knowledge' (Argyris, 2004).

Summary

In summary, the high road of sustainable development is a continuously ongoing process; like 'democracy' it has to be won every day. Hopefully, like most advanced skills, its practice will become easier with time as it becomes part of the culture, the shared values and theories in use. However till then it requires the consideration and integration of many factors that are not consciously considered in many change programmes. It will be difficult to establish and maintain, basically because it requires personal changes on the part of the actors involved. Yet much of what we know about innovative forms of work organisation has been based on exemplar case studies whose time frame has generally been ephemeral at best. As with Peters and Waterman's research on supposedly 'excellent organisations' in the 1980s, (Peters and Waterman, 1982), such cases have an alarming tendency to pass their sell-by date in rather a short period of time. Accordingly, there is a need now for research engagement of a much more enduring nature on the forms and prerequisites of sustainable development.

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5 Innovative Work Organisation for Flexibility, Sustainability and Labour Productivity

5.1 State of the Art in this Field, in Practice as well as in Theory

Torsten Björkman

5.1.1 "Deteriorating Swedish Work Environment – a Threat to the Future of Swedish Industry"

The statement above is the title of an acclaimed article, from Jan 29, 2006, published in the leading Swedish daily newspaper, "Dagens Nyheter". The author is no less than PG Gyllenhammar, a legendary personality in Swedish society since his decades as progressive CEO of Volvo. In the seventies and eighties "PG" (his pet name in Sweden) took many initiatives to enrich industrial work in the corporation he was heading, the new plants in Kalmar and Uddevalla being the most striking examples. PG has recently staged a comeback by being selected chairman of the dynamic Stenbeck Group by its young heiress, Christina Stenbeck. Gyllenhammar's plans back in the early nineties for a European merger between Renault and Volvo and thereby a European response to global challenges in the auto industry met much opposition though, not the least from the institutional owners of Volvo. In 1993 he was forced to resign from Volvo. Later that decade the answer to the global challenges seemed to be continued and increased Americanisation of Swedish workplaces and working life. But since Ford acquired Volvo Car in 1999 and GM took control over Saab in 2000, most, if not all, of the organizational innovations in the Swedish auto industry have been eliminated.

Gyllenhammar's main argument, and many seem to agree, is that job content is back to the monotonous levels of the sixties from which the reforms once started. The Americanisation of the Swedish auto industry is not a success, either economically or from a quality of working life perspective. Ford is in trouble, GM is near bankruptcy ("The Tragedy of General Motors. It's heading for a wreck", Fortune, Feb 27, 2006). GM is obviously performing poorly in both cost-cutting and revenue growth according to most analysts. The present top managers of the two carmakers disagree emphatically, though, that they have abandoned the organisational reform ideas of the past. They retort with a lot of positive claims for their respective organisations. According to the managers both Volvo and Saab give priority to safe driving and passenger pleasing designs, as no one would question, but the corporate commanders also claim that they take social responsibility, promote a sustainable environment and an ideal workplace. Are the critics or the managers of Volvo and Saab right or wrong? The evidence of pros and cons are more anecdotal than systematic. Few studies have been made recently. It has become tougher for researchers to get access to the workplaces of these and many other corporations in Sweden.

The latter complaint surfaced for all to see in an evaluation of the nine Swedish Work Science departments from Lund University in the south to Luleå Technical University in the north, an investigation that I chaired last year on behalf of the Swedish National Agency for Higher Education (2006:5 R). Another complaint dealt with dwindling public funding for workplace research and an increased dependency, especially for doctoral studies, on "external" whims and favours (read; if corporate managers find it in their interest to get the research done or not).

What has happened in Volvo and Saab unfortunately seems to be true of many of the major Swedish workplaces. Gyllenhammar is arguing that Swedish industry in general is losing track of the way into the future. Why keep on producing in Sweden if the skill requirements are easily met by, for instance, Chinese workers to a fraction of the cost for Swedish labour, is his often repeated, rhetorical, question. Why build your plants in a highly educated society, if illiterates are perfectly able to handle the jobs you offer?

5.2 The future of Americanisation

The Americanisation of ownership is not an isolated phenomenon only valid for the once Swedish auto industry. Pharmaceuticals, armaments, shipbuilding are other examples of industries with now predominantly American ownership. It is tempting to jump to the conclusion that this explains why American firms nowadays dominate such a vital part of the innovative system of our country as management consultancy. It is true for Sweden (as well as for many other European countries) that McKinsey, Boston Consulting Group, Booz, Allen and Hamilton, Arthur D Little, Gartner, A T Kearney, not forgetting the biggest of them all, Accenture, are on top of every conceivable ranking list in management consultancy. Let it be size, growth, profits, number of important assignments, the American firms dominate. First introducing the latest buzzwords and fads like Lean Production, TBM, TQM, BPR, Balanced Score Cards, Network Based Organisations, the same story, the American firms dominate. They are also selling the most of these faddish managerial and organisational solutions during the few years, when each fad is considered the best and most innovative way of doing business. In this industry there are few lasting innovations. This year you had better forget last year's craze to be free to be amazed by the newest thing. Industry is like a perpetual moving machine. It is not coming to a standstill due to the many mistakes of the past, which I think would be a reasonable effect. If you cannot deliver what you have promised, important increases in productivity and profitability, your trust-worthiness would be damaged and you would have difficulties in reappearing to the same customers trying to sell a new fad. But this is seldom the case; on the contrary, the many mistakes function as the major driving force in the machinery.

To observers of this industry, observers of a more cynical nature (Shapiro, 1996), the creativity of this industry is to a large extent only linguistic. The consultancy firms are constantly creating new fancy names for "cost-cutting", sometimes also adding one or two new names for "revenue growth". The innovativeness of this industry is limited in other words according to this analysis, but the marketing is impressive. The fads, the hype, the buzzwords, the gurus, the bestselling "bibles" of new organisational concepts and models, the promises of increased competitiveness function beautifully to lure insecure managers into buying very expensive consultancy assignments. The firms of this industry would not hesitate to add sustainability to their list of buzzwords; productivity and flexibility have been there for a long time.

The American "take over" of management consultancy is older than the wave of American acquisitions of major Swedish corporations, to argue why I think it is a premature conclusion that ownership explains the American supremacy in managerial consultancy. Hearts and minds of many of our leading managers had already been won long before they became employees to American owners. One particular aspect of Americanisation that understandably seemed very attractive to them was the American ways of executive pay. In this particular field many innovative systems of "Wealth Building" have been introduced during the last decade. In a study of ABB ("Being Local Worldwide. ABB and the Challenge of Global Management", 2001) I

myself was close witness to the shocking revelation that the multinational's famous Swedish CEO, Percy Barnevik, had a secret retirement agreement worth a billion Swedish crowns. The timing of this revelation contributed to the shock. The globalisation strategy of ABB under the rule of Barnevik was reappraised. His insistence on creating a bridgehead on the American market, buying Combustion Engineering, contained a catch. It made ABB liable for asbestos exposure, more precisely the risk of asbestos exposure, to all living employees of Combustion Engineering. That liability, costing some five billion US dollars made the acquisition of Combustion Engineering the worst transaction ever in Swedish economic history, almost ruining the whole ABB Group. The image of Barnevik as an economic wizard evaporated as well as his reputation as a hard working idealist always giving priority to the interests of the owners.

In the oldest corporation of the Stockholm stock exchange, the insurance company Skandia, the executive remuneration programmes have been even more lavish than in ABB, costing the corporation more than 4.5 billion Swedish crowns. These exposures of excessive executive pay did result in the unmasked CEOs losing their jobs. Generally speaking they were only the most visible part of the iceberg, the increases in executive pay continue. We have witnessed a dramatic polarisation of the corporate reward systems making management the winners and rank and file the losers in relative terms. Institutional ownership seems to go well together with some kind of managerial revolution. In that sense also our working life has become more American.

In a recently published analysis of the development of managerial consultancy ("Management – still a fashion industry", 2006) I present some, what I myself consider as striking, examples of gullible Swedish managerial customers buying what they think is the latest fad in innovative work organisation. One such case is "empowerment". The short version of the story is that Tom Peters, famous organisational "guru", paid a few visits to the Swedish workplaces of ABB in the early nineties ("Liberation Management", 1992). Peters was struck by the positive attitudes to new technologies and organisational change amongst ordinary Swedish blue-collar workers. He attributed this, rightly I think, to the long tradition of co-determination agreements between employers and trade unions. Being a commercially savvy consultant Peters realised that promoting co-determination or "Mitbestimmung" (as it is called in the USA) was a tough sales proposal in an American setting. The chance of success would be slight, close to nil. Peters decided to call the Swedish model "empowerment" (Crainger, 1997). Knowing this background it has been strange to witness the eagerness with which Swedish managers have bought "empowerment programmes" from American consultancy firms. I have personally tried to convince Swedish managers, for instance in Ericsson a decade ago, not to pay for "empowerment" programmes, telling them that the American consultants got the ideas from Sweden. I thought it reminded us of the fairy tale by H C Andersen about the emperor's new clothes. My advice was given in vain. The managers bought the expensive empowerment programmes anyhow. The Swedish managers thought the Americans had added something, which we did not have here in Swedish working life. With customers, as ignorant as these Swedish managers, it will not be easy to change our innovative system. In such a cultural context it is obviously hard to promote "invented here" - innovations, the magical word to Swedish managers seems to be "American".

The weakest link is determining the strength of a chain. If a European innovation like co-determination, so easily can be repackaged and resold as "empowerment", European marketing is obviously inferior to American marketing, given the wanting cun-

ning of the European managers in distinguishing an original from a copy. This is like shooting the ball into one's own goal. Patent infringement is another way of attacking the innovation systems of Europe. In that case we have had goalkeepers, but they have not succeeded. American firms have scored goals anyhow, in other words is our ability to prosecute patent infringers a weak part of our innovation system?

Håkan Lans is the most prominent Swedish inventor alive. He has developed the world's foremost system for air-traffic control as well as one navigation system widely used and admired in shipping. Håkan Lans is also the father of many inventions and innovations in computing, one being the colour system used in most computer screens. More than twenty of the leading computer makers in the world did simply steal that invention. After long and costly lawsuits most of the Japanese computer makers did finally pay for the infringement. Many American computer makers still refuse. They are brazen enough trying to make Lans pay for the court costs. If they win he will be ruined. The Swedish government has tried to help him with legal advisors and high-ranking representatives of EU have delivered protests to the US Government, but so far of no avail. Presently VINNOVA is helping him with his legal expenses in the US, help in a matter of principal, a principle of great importance. This sad story is part of a longer narrative of an international patent system in disarray, due to American infringements in particular. Håkan Lans has concluded; the curse comes with commercially important inventions. In those cases patents are not respected. Lans' advice is simple and bitter; if you want to live a quiet life do not make big inventions.

5.3 Organisational implications for how to foster innovative work organisations: From rhetoric to results

The prospects for a continued Americanisation of Swedish working life are still bright, if Sweden as a nation (with EU backing) fails to improve its abilities to protect and exploit Swedish technical inventions and Swedish organisational innovations. The major problem is not a lack of inventions and innovations; the Swedish rate is well above Western averages. What is alarming is the naivety with which they are exploited domestically and internationally. The two examples, co-determination or "empowerment" and Håkan Lans' colourscreen, are unfortunately representative of a broader pattern of lacking resources for exploitation. The way, we in Sweden have managed programmes for organisational innovations, is to me particularly telling. For the biggest of all such programmes in our country, the Work Life Fund in the first half of the nineties comprising more than 25 000 projects of work place innovations and improvements, the state invested ten billion Swedish crowns. When the programme reached its goals, demonstrating the diversity and widespread creativity in organisational innovations, all change agents in the regional fund organisation were dismissed, all funding discontinued. 25 000 reports were handed over to a library. No one with first hand knowledge of the Work Life Fund was left over to the library to answer the simplest questions. The theoretical model governing this strange behaviour had many names; one was "prairie fire", another "chain reaction". The expectations on the level of the Swedish Cabinet Office focused on spontaneity and "self-synchronisation". They expected a virtual takeoff as a result of the programme and did not invest anything in branding or commercialisation. Nothing like a chain reaction took place. A more adequate description would be that it all came to a complete standstill. The proportions between sowing and harvesting were something like a million to one, a very optimistic calculation if you are interested in results.

The state of the art in this field in Sweden and Europe finally seems to be undergoing a fundamental transformation. Many important actors in different European “innovation systems” are emphasising the same theme, the importance of execution and exploitation versus the importance of inspiration and the free flow of new ideas. Europe has been lagging in the former and been very good at the latter endeavour. Time is finally ripe for a focus on execution. A report with the potential of further moulding the public opinion is the OECD booklet, “Going for Growth – 2006 Edition”. In an editorial in Newsweek falsely summarised as “The Decline and Fall of Europe” (Feb 20, 2006). One lead conclusion in the report, not mentioned in Newsweek, is that the Nordic countries are well ahead, worldwide, in creating potential innovations but not to the same extent proficient in turning them into workable practice. The recommendation, first and foremost, is to improve the interaction and interplay between R&D actors and the corporate world. A second set of recommendations deals with the service sector emphasising the importance of shifting the focus of that sector as well, from new concepts to new implementation, in praise of execution.

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6 Evolving Needs of Organisational Change and Individual Sentiments

Thomas Andersson, Jönköping University.

6.1 Introduction

In the wake of globalisation, liberalisation and technical progress, notably in information and communication technology (ICT), the world economy is marked by sweeping structural change. Shorter product cycles, intensified product diversification, rapid obsolescence, and rising costs for developing new technology offer a range of opportunities as well as challenges. Above all, the costs of diffusing codified information have diminished, adding to previous reductions in communication and transport costs. At the same time, “tacit” knowledge remains vital for using information (Pavitt, 1998).

Practically all kinds of organisations meet with pressures to improve with respect to the development, adaptation and upgrading of knowledge and technology. As part of this response, efforts are commonly made to specialise operations, and to adjust the boundary lines between internal processing versus transactions performed at arm’s length (Black and Lynch, 2000). Firms intensify efforts to upgrade core business, while increasing the capacity to outsource other functions, and seek to become fully effective in developing, accessing and exploiting all relevant knowledge in their particular niche of specialisation. Parallel adjustments in strategy can be observed in other kinds of organisations, such as public sector authorities and universities, although obviously less subjected to competitive pressures.

The literature on organisational change has brought extensive insights into what is under way in terms of new organisational forms, on the complications of meeting with partly conflicting goals such as higher productivity and greater flexibility versus a better work environment or a healthier work force, and on the factors influencing the degree of adjustment, skills upgrading, etc. within different societies or kinds of organisations. Yet, the literature, and also the programmes in place to put insights into practice, remains plagued by a range of gaps. These emanate from the complexities of what is at stake. Organisational changes are influenced by evolving needs as well as by individual sentiments. Complementary endowments and skills need to be able to connect and fulfil demanding functions. Structures and incentives that are favourable to dramatic breakthroughs may be different than those that favour incremental improvements. Putting in place effective synergies and interface between inherently different but complementary actors varies depending on context. Crucial challenges may concern linkages such as between scientists – industrialists, innovators – entrepreneurs or financiers, large firms - small firms, universities and research institutes vis-à-vis one another or vis-à-vis the private sector, and so on. There is a need of sharpening our view on what is required for strengthening interactions under various specific circumstances. There may, indeed, be important variation across organisations, sectors, and countries as to which factors should be given priority in efforts to pave the way for needed organisational changes.

In the ensuing section, this paper reviews some salient features of organisational change. Factors accounting for complexities in evolving needs for organisational change and in individual sentiments are subsequently reviewed. The paper finally takes note of the particular challenge of linking universities and industry more effectively. The paper finally comments on possible priorities in future research.

6.2 Nature of mainstream processes of organisational change

Private business, and notably the manufacturing sector, adopted sweeping organisational changes over the last decades which have become associated with the phase-out of the Fordistic production methods. The emphasis on mass production and standardisation has given way to the need not only of responsive but also pro-active strategies. The focus on static efficiency, i.e. embracing more effective use of time and resources at a given point in time, has been replaced by strive for dynamic improvements over time in a world marked by continuous change and uncertainty.

Through technical progress, improved communication tools and the diffusion and usage of ICT, knowledge-intensive production processes increasingly provide an edge across a widening range of industries. Sharp productivity improvements are made possible through the introduction of sophisticated production techniques and more competent workers, and are coupled with improvements in the quality, reliability and flexibility of operations. New options arise for furthering and diversifying products and output so as to continuously improve the fit with evolving, specific customer needs.

The changes have shifted attention to what can and should be done to enable workers to be creative and take own initiatives, thus delivering more through innovativeness than what could have been anticipated in any pre-determined planning schedule. Realising such improvements tends to require a combination of high specialisation among workers and a strong ability to link different kinds of competencies within a particular organisation. Organisational changes have been introduced to manage the task. Among other things, traditional hierarchical structures have given way to flat organisations. Extreme division of work has been replaced by work rotation, broadening of competencies and the establishment of working teams that are self-governing to a high degree. Service work has been professionalised and the demands for communicative competencies increased while recruitment processes have become more effective and professional.

In all this, "outsourcing" along with "offshoring" and a sometimes far-reaching fragmentation and specialisation of the value-added chain has commonly been part of the overall strategy to improve firm performance. The manufacturing sector has taken the lead in raising efficiency and effectiveness which, among other things, has contributed to shedding of workers and the increasingly marginal role of this sector in the overall job performance of developed countries. At the same time, manufacturing and service operations have become intertwined. Also, key strategic firm functions, related to governance and R&D, have been organised so as to be interlinked with production activities in ways that allow for information and impetus for change to flow in both directions. Now, private services have followed a similar course, and many public sector domains are moving in such directions as well. The health and educational sectors, both of which are dominated by public-controlled interests in most countries, have been relatively slow in enabling more effective use of new technologies, and in embracing organisational changes that would have allowed for the effective introduction and use of ICT. As a consequence, information management and use of modern information tools remain archaic in both these domains, hindering a range of needed improvements in performance. Meanwhile, vast communities of small and medium-sized enterprises are becoming exposed to intensifying competition. Many have embraced their own processes of streamlining and internationalisation, and their needs and strategies to engage more qualified staff have intensified.

Further, the work force in developed countries is ageing fast, and a crucial generation of experienced managers and staff will soon be phased out - some apparently too

early as the retirement age is declining whereas life expectancy rates are on the rise. But the difficulties for making the fit with the changing needs of companies apply to younger workers too. Many newly educated do not find their way into the workplace, as employers prefer those already endowed with work experience. There is a heavy emphasis on investing in and upgrading the competencies of those that are the most productive already and in the midst of their career. The pressures for change also emanate from issues associated with ethical, environmental, and social considerations.

6.3 The complexity of learning and innovation

Learning and innovation are vital for the long-term performance of all human activities. Various factors influence the propensity of individuals and societies to advance in these respects.

According to Fishbein and Ajzen (1980), and the "Theory of Reasoned Action" (TRA)-model, behaviour – including the adoption of new technology – is determined by the intentions and attitudes of individuals. The so-called Technology Acceptance Model holds that perceptions and attitudes are important for individuals' ability to adopt new technologies, but that the potential usefulness of the new technology, coupled with the simplicity (and lack of transaction costs) with which it can be put to use, matter as well (Davis et al., 1989). The properties of technology are here viewed as greatly important for gradually shaping the attitudes of the individual, and in the end his or her intentions how to make use of new technology.

The so-called technology adoption model (Jacobsson and Thomasson, 1991) takes into account the presence of motivating as well as hindering factors. The latter may include cost, attitudes and access, as well as how the individual perceive of the problems that arise in the use of new technology. The motivating factors include anticipated financial gains. Theories on the diffusion of technology tend to combine and integrate considerations such as these. According to Rogers (1995), one may discern factors at four levels which influence innovations and their diffusion:

- Properties of innovations themselves
- Channels for communication
- The time factor
- The social system

It should be noted, however, that progress takes different shapes, and that there may be important contradictory rather than complementary aspects in this regard. For instance, there may be a conflict between the ability to innovate and the extent to which the diffusion and absorption of innovations are embraced. Factors that determine the intensity of innovation versus the diffusion, acceptance and exploitation of innovations may be at odds with one another. This was early coined in terms of a trade-off between the *explorative* element, associated with the development of new solutions, and the *exploration* of already existing established means (March, 1991). A one-sided emphasis on the development of new solutions can easily come at the expense of abilities to improve performances within the already prevailing means of doing things. One may then run the risk of excessive experimentation without direction, and without the ability to make use of already existing knowledge. If the emphasis is too much on already existing knowledge, on the other hand, there is a risk that marginal improvements are cherished, irrespective of whether they lead in the right or wrong direction (sub-optimisation of activities over time). Lock-in effects then lead to inefficiency and decline, cherished by the inability to seek out and embrace more

radical solutions. The contrast has, among other things, been observed in the context of financial systems and modes of corporate governance, where there is a notion of contrast between market-based outsider-friendly systems versus bank-based insider-friendly ones.¹ Each tends to display varying characteristics and specific advantages for different kinds of industrial activity (King and Levine, 1993; Maher and Andersson, 2002). Empirical evidence suggests that countries with strong market-based systems tend to display higher growth in industries where up-skilling is decisive and R&D-intensity is high (Carlin and Mayer, 2002).

Creating room for change does not only raise prospects for improvement but also generates risks. A far-reaching decentralisation of budgetary responsibilities and delegation of decision-making can, for instance, cause unclear and unrealistic expectations, create uncertainty and frictions between areas of responsibility, and give rise to stress among managers as well as employees. There are also good reasons why many individuals resist changes. In fact, renewal is seldom a harmonious process. The introduction of radically improved solutions does not come for free but means that old ways of doing things, and the champions of those ways, will have to give way. Turf-battles, and not-invented-here syndromes, appear in all organisations. Commonly it is observed that innovators tend to be rather young, and that sometimes they belong outside – or in the periphery of - the community whose ideas they are challenging. Similar observations have been made in the case of truly path-breaking scientific discoveries.

Facilitating radical progress within an organisation may require putting in place mechanisms that either make it possible to oust or neutralise those that lose out, or allow them to regroup and regain a strong standing through credentials other than those associated with past practices. In early stages of commercialisation of new technologies, genuine uncertainty on the chances for success requires a set-up conducive to risk-taking and experimentation, which may be hard to find within a given organisation with its established niche and area of core business. For such reasons, it may also be that the arrangement of a serious effort to try out a particular option for a radically new product requires a spin-off, i.e. the effort of an entrepreneur to take forward in a separate new company what has been set out by an innovator (Acs et al., 2004). In many cases, the innovator and the entrepreneur are not the same, i.e. the required competencies are not identical and do not reside in the same person. Progress may then require that a degree of trust and shared mutual benefit can be realised by these different players, as well as with those prepared to back their efforts with financial means.

The potential for successful innovation is often dependent on conditions allowing for favourable synergies between different kinds of assets and competences. This applies both to the interplay between actors with complementary endowments, and to the constructive co-operation between individuals in the possession of complementary experience and skills. Elements of this has been recognised in the literature for years, including in the context of industrial districts (Marshall, 1890), competence blocs (Dahmén, 1950), clusters (Porter, 1990), or innovation systems (Lundvall, 1992). On the other hand, parts of the literature put an excessive and simplistic emphasis on the virtues of co-operation. Whereas interactions within clusters, etc., can strengthen competitiveness and innovation, they are not immune to pitfalls and risks that may actually reduce competitiveness, *ceteris paribus*, and/or result in stagnation or decay. Such outcomes may materialise due to:

¹ The former tend to be associated with the Anglo-Saxian model of the United States and the United Kingdom, the latter with countries such as Germany and Japan.

- i) *Vulnerability*: Specialisation can invoke vulnerability as technological discontinuities, shifts in the general economy, trade patterns and customer needs, etc., undermine specific advantages.
- ii) *Lock-in effects*: Excessive reliance on given contacts and tacit knowledge in combination with neglect of external linkages and lack of foresight may account for lock-in effects due to dominance of established practices (Amin and Cohendet, 1999; Martin and Sunley, 2001).
- iii) *Creating rigidities*: Dense existing structures risk delaying a radical reorientation or hinder needed adjustment.
- iv) *Decrease in competitive pressures*: Co-operation can cause a reduction in competitive pressures and hence in the driving forces for innovation. It can create societal inefficiencies as tight-knit groups of actors block entry by newcomers.
- v) *Self-sufficiency syndrome*: Growing used to past successes, an established group could hinder adjustment at odds with learning accumulated collectively through previous success periods, leading to gradual failure to recognise changing trends, and thereby a distortion towards excessive reliance on incremental improvement at the expense of openness to radical renewal (Harrison and Glasmeier, 1997).
- vi) *Inherent decline*: Social capital may both shape and create a successful community and subsequently lead to its demise as property prices increase and outsiders are excluded (Portes and Landholt, 1996).

The establishment of, exposure to, and maintenance of multiple networks and information channels may be necessary for counteracting such forces. The literature on dynamic network exchanges illustrates how sensitive exchanges are and how they can change over time (Watts and Strogatz, 1998). The composition of contact points is likely to influence how information exchange, learning processes and competencies evolve.

The development, acceptance and adoption of new technology and ideas are thus influenced by multiple economic and societal factors. Courage and leadership at high levels paving the way for bottom-up initiative and openness may raise the prospects of success in a particular organisation. At the same time, there may be a need for room for new organisations to be created. Special efforts and programmes may likewise be needed both to allow for the effective exploitation and development of senior workers under conditions of rapid change, as well as for the effective introduction of new competent workers. The needs and the abilities to bridge between complementary skills are likely to evolve continuously.

6.4 Interface between knowledge creation and use

The above discussion has underlined the importance of organisational change as well as the complexities involved. Different sectors and kinds of organisations encounter their specific challenges and opportunities, applying both to intra- and to inter-organisational changes.

To provide one particular set of observations, knowledge flows are greatly dependent on the way that universities and research labs are organised, and the conditions shaping the linkages between science, research and industry. The current trend goes towards exposing traditional universities and science institutions to more competition and establishing more effective driving forces for them both to specialise and carve

out their niches, and to spur the various actors concerned to exchange ideas and cooperate in strengthening links of significance to the national or regional innovation system. At the same time, university organisation is traditionally based on broad coverage, stability, and resistance to change (Martin, 2003).

In several respects, recent developments challenge old structures of authority of knowledge in society and the monopoly position of universities. Attention needs to be paid to knowledge-in-context, within the organisation as well as outside in networking relations in the organisational approach to knowledge production, and to the evolving role of scientific knowledge in the economy and wider society. Views on the relations of universities for society are changing, as exemplified by the notion of the entrepreneurial university (Clark, 1998; Hey et al., 2002) or the organised co/operation with both the public sector and industry within the Triple Helix (Etzkowitz and Leydesdorff, 2000). Theories attempt to take into account the relations to the role of professional producers as well as users of knowledge, the experts, the content of knowledge as well as the many old and new stakeholders in knowledge. It is noted that the roles of university, public sector and industry can no longer be sharply delineated. The push for science-industry linkages is given ways to schemes that can allow for truly participative and common efforts in both education and training, and in research. The movement of experts and the indirect and aggregate results of multiple individual connections and impulses are gaining attention. Here, each individual institution must work in the best way for creating its own network-based environment with multiple mutually enforcing linkages (Andersson and Sjölund, 2005).

What counts as knowledge as well as how the boundaries between knowledge and non-knowledge are perceived matter not only for the assessment of a university, but for what incentives, learning processes and accumulation of competencies are stimulated among the actors connected to it. The classic quality control system, the peer review, aims to produce the best possible knowledge while, at the same time, guiding learning processes based on the norms of science. Scientific activity as an apprenticeship kind of training functions tacitly based on the general framework of the scientific community. The limits of the traditional and fairly uniform learning system of universities are becoming apparent, however, and in everyday practice result in dilemmas of handling conflicting demands. As the mechanisms generating knowledge are increasingly subjected to new and varied impulses, the evolving perception of what represents new trustworthy knowledge undermines the traditional monopoly position of the university (Beck, 2003). Meanwhile, systems for quality assessment and evaluation of research are getting a more demanding as well as more important role.

Another development is that the strive for focus and specialisation in institutions may run into conflict with the notion of curiosity-driven, open-ended scientific discovery. A tilt towards funding sought in competition may not only diminish the autonomy of the university but also favour already established researchers, cut the room for experimentation and limit the time-horizon of research efforts. Policy-frameworks must recognise the need for multiple and inherently diverse and complementary institutions engaged in higher education, research and innovation. Likewise, each university must be able to design its specific governance and learning model, which is capable of serving as an instrument for day-to-day learning, supporting niches, and also setting out long-term directions for pre-empting and adjusting to changing societal and policy demands. Conditions for this to be possible must then, again, be in place, meaning that the playing field must allow for true pluralism. The funding system must be able to allow for radical reorganisation as well as continuously induce incremental improvement, with tangible responses to the evolving revelation of strengths and

weaknesses in performances, applying across the range of university functions, including education, research, and the establishment of relations with wider society, whether in the form of big business, SMEs, or other actors.

6.5 Concluding remarks

With declining costs for accessing information and for communication, societies as well as organisations need to shape incentive structures in ways that are conducive to openness, readiness to adopt new ideas, and a combination of specialisation and network building. There is considerable need of an intensified research agenda to shed light on what playing rules can help this come about in various kinds of institutions. There is a need for increasing our understanding of the way relevant stakeholders interact in facilitating or hindering processes of adjustment within different kinds of institutions, as well as in what forces are currently at work in ongoing processes of intra- as well as inter-organisational change. It is important to strengthen the link between such research and the policy sphere so as to enable more effective implementation of measures that are relevant for addressing crucial impediments to improvement in specific cases.

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7 Participants at the Dublin workshop

- Kenneth Abrahamsson, Ulla Kihlblom (Swedish Council for Working Life and Social Research, Sweden)
- Elise Ramstad (Ministry of Labour, Finland)
- Volker Telljohann (Istituto per il Lavoro, Italy)
- Friedhelm Keuken, Claudia Thierfelder (Gesellschaft für innovative Beschäftigung, Germany)
- Dimitra Pappa (Demokritos/ Ministry of Development, Secretariat for Research and Technology, Greece)
- Paul Oehlke, Claudius H. Riegler, (Project Management Agency of BMBF at DLR, Germany)
- Ilkka Tahvanainen (Work Environment Fund, Finland)
- Lucy Fallon-Byrne, Edna Jordan, Damian Thomas (National Centre for Partnership and Performance, Ireland)
- Mats Engwall, Erling Ribbing (Swedish Agency for Innovation Systems, Sweden)
- Ger Tielen (DEMIN/TNO, Netherlands)
- Annika Härenstamm, Eskil Ekstedt (National Institute of Working Life, Sweden)
- Claudio Zettel (Coordinator WORK-IN-NET, Project Management Agency of BMBF at DLR, Germany)

8 The Project Consortium

Finland

Finnish Workplace Development Programme, Ministry of Labour

<http://www.tykes.fi>

Work Environment Fund

<http://www.tsr.fi>

Germany

Project Management Organisation at DLR of the Federal Ministry of Education and Research (**Coordination**)

<http://www.pt-dlr.de>

Ministry of Labour, Health and Social Affairs of the Land Nordrhein-Westfalen

<http://www.mags.nrw.de>

Gesellschaft für Innovative Beschäftigungsförderung

<http://www.gib.nrw.de/de/index.htm>

Greece

Secretariat for Research and Technology, Ministry of Development

<http://www.gsrt.gr>

Ireland

National Council for Partnership and Performance

www.ncpp.ie

Italy

Regional Government of Emilia Romagna

<http://www.emilia-romagna.it>

Istituto per il Lavoro

<http://www.fipl.it>

Norway

Research Council Norway

<http://www.foskningsradet.no/english>

Poland

Ministry of Science and Higher Education

<http://www.mnisw.gov.pl>

Federation of Engineering Associations

<http://www.not.org>

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Development of work and services (Coordination)

Heinrich-Konen-Strasse 1
D - 53227 Bonn, Germany

Tel.: +49 (0)228 3821 131
Fax: +49 (0)228 3821 248
<http://www.workinnet.org>

Contact:

Prof. Dr. Kenneth Abrahamsson
Phone. +46 8 7754091
Kenneth.Abrahamsson@fas.se

Dr. Mats Engwall
Phone: +46 8 4733000
Mats.Engwall@vinnova.se

Dr. Claudio Zettel (Coordination WORK-IN-NET)
Phone: +49 (0)228 3821 306
claudio.zettel@dlr.de

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