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Abstracts/Summaries

The new work organization and conducive value

by Robert Karasek

This paper outlines a new policy direction – Work Quality Policy (WQP) – based on a new model of production organization ('conductive production'). The new policy direction entails a perspective that has been missing from our central political economic discussions. The perspective is predicated on the thesis that issues of work organization are now central not just to the social quality of our working lives but to the economic impact of work as well. It is, also, claimed that a new political-economic approach is needed because of major social dilemma's that arise when work organization issues are omitted: dilemma's in humane growth strategies, in job insecurity and work over-intensity, in services, and in the relation between civil democracy and economy. Including the work organization in the core of our political-economic debates will provide a platform for a social policy that goes beyond both the market-oriented policy (MOP) and the welfare state policy (WSP) models that currently inform the larger part of our policy debates.

Work quality policy is linked to existing social policy models, yet goes further than these in at least two directions. First, the new work organization contradicts the traditional output value concept. Conductive production calls for a new concept of social validation of production output, or value. We will call this new concept 'conductive value'. This new concept is based on relationships of active partnership among producers and between producers and consumers, relationships that find no place in the traditional concepts of economic value. Second, the new work organization calls for forms of active social participation and consumption, of the 'consumer' in a far more active and influential role relative to the producer, than in mass commodity production and consumption. Activating social relationships in the civic society and community are necessary to sustain the new form of production in the long run. At the same time, such relationships are an 'output' of conducive production. This positive feedback condition enables new forms of humane economic growth.

The importance of industrial politics

by Jaques Christis

Karasek's Job Quality Policy rests on two pillars: active jobs in organizations and 'conducivity' in the economy. A new concept of value, conducive value, is needed to make the soft costs of high strain jobs and the soft benefits of active jobs visible. Although the concept of conducivity is important, the elaboration of this idea into a two-sector model of the economy is criticized. Instead, the article argues for an integration of conducivity in the market economy. Recent transformations of bureaucratic corporations, work organizations and employment relationships make such an integration possible but not necessary. An active state that shifts its attention from distributional matters to an upgrading of industrial structure is needed.

Labour politics

by Ton Korver

In this article the insights of Robert Karasek on the possibilities for improving the Dutch record in labour force participation, are compared to and contrasted with the insights of the Dutch Scientific Council for Governmental Policy (WRR). Karasek's new emphasis on 'conductive' jobs in a 'conductive' economy is presented as a contribution to improve the quality of working life and, by the same token, the level of participation of the labour force. The WRR, on the other hand, presents a new perspective on combating unemployment and low labour force participation as such. This new perspective, the 'participation paradigm' as distinct from the more traditional 'protection paradigm', underscores that enlarging the supply of labour will, given time, unleash the demand for labour. A new brand of 'Say's Law' as it were. Whether the best way to improve the Dutch record of labour force participation is through the quality of its demand, as Karasek has it, or through the quantity of supply, as the Council has it, depends in both views on the social significance of labour. The Council, in particular, views labour as the chief mode of social integration in modern society. Karasek is more subdued on the matter. In his view the question whether work integrates depends first and foremost on the participative properties of the job, and these have to be designed and implemented.

Work: Indispensable good or necessary evil

by Paul de Beer

It is generally assumed that the shift in employment from the industrial sector to the service sector has led to an improvement in the quality of work. Physically demanding and dirty work is often related to agriculture, manufacturing and construction, while service work is considered to be clean and intrinsically rewarding. This article demonstrates that this assumption is wrong. Generally speaking, there has not been a clear secular rise in the quality of work during the last 15 years. In some respects the quality of work has indeed improved, especially regarding job content and job level. But in other respects the quality of work has deteriorated (e.g. the pace of work, physically demanding work, flexible work) or it does not show a clear trend (e.g. wage level). This is explained by the fact that the differences in the quality of work between sectors are smaller than is often thought and that therefore overall trends in the quality of work are more important than shifts between the sectors. The absence of a clear rise in the quality of work casts doubts on the prevailing view that participation in paid work is essential for individual well-being and self-respect. Hence, it is recommended that policies of fostering labour force participation are accompanied by policies to improve the quality of work.

The new work organization and conducive value

Robert Karasek*

1 Work organization

The Work Quality Policy begins with the obvious: many of the costs and benefits of work activity are transferred to our lives as citizens and consumers through non-market processes. In the field of work instances of such costs and benefits abound. Work Quality issues have major effects on (a) the innovation capability of companies and workers, (b) community and family stability, (c) health and mental well-being, (d) participation in and strength of democratic institutions. From (a) through (d) the market may have some role to play; a limited one though, not a central one. Markets may enhance innovation, and they can add to the warp and weft of communities. Markets may improve health conditions, and again, they may be essential for the public cause. On the other hand, markets may misdirect innovation efforts, and they may destroy the fabric of community. They may endanger health conditions and they may reduce the public space to practically zero. Markets, then, need company. The Netherlands, and the initiatives in this country in the field of work and working conditions, is an apposite example. The gist of these new initiatives is to emphasize the advantages of a preventive approach, and market (in particular: financial) incentives are used to promote compliant behavior. These initiatives, however, are biased because of their emphasis on costs, rather than benefits, of production. Consequently, they underestimate the potential of social policy as a productive factor in its own right. To accomplish its job here, the space for the market must be redesigned.

The case of the low skilled worker is exemplary in this respect. The high incidence of unemployment among low skilled workers is ascribed to the level of gross wage costs, relative to the productivity of such workers. To restore the balance, the usual policy is to lower gross wage costs, rather than to increase productivity. Productivity is taken as given, as something beyond the sphere of influence of social policy. At this juncture the Work Quality Policy takes off: a human perspective on productivity can be at the heart of social policy. Concretely: jobs can be developed which increase the skills, and thereby the productivity of workers: active jobs. Active jobs use the full skill range of workers, not just their manual dexterity, or

their bodily strength, or their typing alertness. And by using them in an appropriate job context skills will not just be maintained, they will be enhanced. Skills grow through using them, not through reducing them to one or a few tiny tricks. Jobs, when appropriately designed, can train workers for still better and more productive jobs in the future and build worker self-esteem and motivation to engage in democratic societal institutions.

We claim that balanced jobs can be designed for all skill levels. We also claim that activation, engagement and competence depend more on the quality of the job, than on the actual skill level of the workers concerned. The benefits of social policy, its productivity effects, hinge on a correct design of jobs. Job design, therefore, is more than the base line of the organization of work. Job design is the core of an economically effective and socially needed program of enhancing and upgrading labor market participation.

Next to benefits, there are costs. Present day policies are expensive: wrongly designed jobs trigger negative health effects and inhibit learning and skill development. In designing jobs, or in redesigning existing ones, the requirement should be that jobs can facilitate learning and that stress as a consequence of poor design can and must be ruled out. The idea is quite simple: disability is to an important degree contingent upon the design quality of job and work organization. Evidence of the effects of the design of jobs on the health, the productivity, and the overall well-being of workers exists. It has come from the confirmation of the Demand/Control/Support hypotheses (Karasek 1979; Karasek and Theorell 1990; Johnson and Hall 1988) that 'active work roles' with high freedom to use and develop skills when coupled with high demands lead to active engagement in the job and to social and political activities outside the job, as well as to further growth of skills on the job. By contrast, 'passive work roles', with little freedom to use and develop skills and with low demands, result in the loss of skills and abilities to engage in social participation on and off the job. Another hypothesis, with a large body of international research support (Karasek and Theorell 1990; Schnall et al. 1994; Bongers et al. 1993; Kristensen 1995), is that when restricted opportunities to use skills and exercise autonomy are coupled with highly demanding work, a 'high strain work role' results – and heavy psychosocial costs of work in terms of mental and physical health risk (including heart disease and musculoskeletal disorders), absenteeism and turnover occur. In all of these, corroborated, predictions the social context of the work role (the 'support' dimension was added to the original, 1979, job demand and job control dimensions) proved an important moderating variable. Socially collaborative facilitation of the use of skills and social-emotional support from people at the workplace increase active participation and reduce strain risk. Work design, in sum, matters.

Work Quality Policy is a policy in which the design of jobs is an essential first step in designing an effective work organization. We maintain that it is a productive

step, not just a cost-cutting one (although it cuts costs too). We do not want to stop at the boundaries of the job or the work organization, however. Conducivity spells new relations between producers and customers or clients. Producers interact with consumers and vice versa, and in the process both parties to the transaction learn from one another. The process is a roundtrip, rather than a one-way journey; a system with feedback loops, rather than a series of separate functional equations. The idea that the economy is a process with a final goal, called consumption, is outdated. Consumption is part of a process, it is not its finale. Likewise, production is part of the process, it is not its kick-off. Economic activity is not a simple means-end relationship. Economic activity is systemic, and had better be conceptualized, therefore, in terms of what it includes and excludes than in terms of what it is after.

To summarize our discussion so far. At the center of the modern political economic problem is a paralyzing restricted notion of valuable activity, be it the activity of producing, be it the activity of consuming, be it the activity bridging producer and consumer. Purposeful action in our society is threatened by the straightjacket of a market concept in which the only legitimate purpose is consumption – consumption as final consumption. Common sense and experiences suggest otherwise, but we lack an adequate vocabulary for expression. This paper offers a few lines in a new vocabulary. It may, for one, help to rephrase some present dilemma's in social policy and to place them in a new perspective.

2 Dilemma's of social policy

Skill underutilization. A policy of increasing the number of low wage jobs and of cutting social expenditures to reduce production costs may make the economy competitive in the short run, but not in the long run. In the long run, human resources will be decisive. Competitive strategies must emphasize human resources rather than natural resources (Piore and Sabel 1984; Porter 1990; Jacobs et al. 1990) and in developing human resources the utilization and growth of workers' skills figure predominantly.

However, the major policy strategy here has been to provide better educational opportunities through formal education in schools. There are many good reasons to insist on formal education in schools. In the field of innovation, however, the issue of work organization is at least as crucial, if not more so. Recent Dutch empirical evidence about innovation in manufacturing and elsewhere shows it to be specifically dependent on the organization of work. Rather than on education as such, then, innovation feeds on the active participation of the workers and the latter is a direct effect of the way that work has been organized into jobs and into relationships between jobs, and in the way jobs bridge organizational boundaries (Dhondt et al. 1995; Peeters and Goudzwaard 1996). Innovation, then, must include the

innovation of the work organization.

There is, next, a little discussed 'skill underutilization' problem in many low status jobs. Much of the education provided by schools is not being used in low status jobs: workers are actually overeducated for many simple jobs. U.S. evidence (reported in Karasek and Theorell 1990) indicates that, while high status jobs do indeed require increased levels of education, the majority of the low status workforce have jobs which underutilize their education, even intermediate high school education. Corresponding evidence in the Netherlands is that the high level of education feeds 'credentialism'. Muizelaar et al. (1992) find that for many jobs there appears to be a 'bidding war' where the higher educated outdistance the lower educated in the competition for jobs, even though the educational requirements of the job remain constant. The struggle for jobs has recently become quite clear. Due to legislation liberating the opening hours for shops, and lengthening in effect opening time with several hours per day, a vast supply of new jobs, mainly of a low skilled character, came into being. The main beneficiaries of these job openings have not been the low skilled however, but their colleagues from schools, colleges and universities, and from married women re-entering the labor market. Does it follow, then, that we have an overeducated workforce in the Netherlands? It has been argued that such is indeed the case (see Muizelaar et al. 1992), although this position does not go unchallenged (Groot et al. 1998). The discussion on the topic would gain strength if the perspective were to shift to the educational level of the working population as a resource, instead of as a sunk investment. The problem, from our perspective, is not one of 'overeducation'. The problem is a problem of 'work-stupidification'. Future production requires breadth of skills, problem solving ability, and integration skills, rather than narrow and polarized skill achievements. New models of work organization are one essential ingredient in the attempt to clarify future needs for education.

Soft costs. Among the many external effects of enterprise, the category of 'soft costs' is an important one. Soft costs refer to work induced losses in human welfare, health and productivity. Such losses may go unnoticed or unregistered for quite some time. Many people possess the ability to postpone or even hide the drawbacks they suffer; hence these go unregistered. Moreover, the effects of our activities today remain invisible for a considerable period of time. They remain unnoticed and by that token unregistered. Next, quite some costs are difficult to account for in terms of who is responsible for what. There may be a bill, then, but no one to send it to. Finally, our statistics simply do not measure many of these costs. For example, although the US unemployment rate is on average lower than the one in the EU, the rates of job insecurity are far higher than in Europe (Uchitelle and Kleinfield 1996; Schellhardt 1996; Lohr 1996). The toll taken by this fear is completely unmeasured in current economic statistics, but it represents a major

'qualitative' drop in social well-being.

Also omitted is the increasing burden of stress-inducing production intensity: the physical and psychological demands of participating in ever more competitive work processes in the global economy. Recent statistics (for example GMD 1990) show that around 30% of Dutch disabilities are reported for stress-related problems in the workplace. Since 1990 it has become sort of common knowledge that the strong performance of the Dutch economy and the high incidence of disability are two sides of the same coin. The two major peak federations of labor (FNV, CNV) announced in 1998 that the struggle against work-related stress should assume first priority. Soft costs, apparently, cannot be postponed forever. Nevertheless, a correct measurement and registration of these costs is overdue. And of course, stress is related to job insecurity. Six months of intense overtime coupled with an uncertain month or two of unemployment is a very undesirable combination for most people even if it averages out to full time work.

Stress and job insecurity, again, are partly the product of the organization of work. Simple and monotonous tasks lead to work-related stress. Job insecurity together with badly organized, simple and monotonous jobs reinforce the dangers of stress and health risks. Also, because these jobs hold no promise to learn from work, they do not contribute to the future employability of workers (De Beer 1996).

Soft benefits. A prominent theme in Dutch policy documents (WRR 1990) is that work is in itself an important social activity and an important mode of participation in society. Work carries its own rewards; to a degree work is its own benefit. Also, work emancipates. Indeed, emancipation is the form that participation in the labor market assumes these days according to the WRR. Participation represents the intervention of society in the economy, of the 'life world' in the 'system'. The concepts of life world and system are taken from Habermas. With a purpose, for the Council wants to put Habermas on his head: instead of the economic system claiming society, society claims, through its emphasis on participation of all, the economic system. To participate, then, is a benefit, it is beneficial for the participants themselves and for their society. The benefit side is notoriously difficult to calculate; indeed many of the benefits are 'soft', and assumed rather than measured. We hypothesize that the difficulty in this respect is simply that most of the benefits cannot be accommodated within a market model and therefore remain unnoticed (except at the immediate micro-level where the benefit arises and is enjoyed). To measure the benefits we need a new concept of value. Work in the service sector is an easy example: services such as health care, education, care for the elderly and children cannot easily be evaluated fully by the market economy, because the beneficial social relations involved in producing and consuming these types of output are not measured at all by the marketplace. Since these benefits are unmeasured in the conventional market, services are underproduced and, insofar as they get pro-

duced at all, are underrated. Through lack of adequate measurement the costs of these services seem all that matters. Consequently, cost reduction is stressed, not the improvement in the quality of life (that is: the emancipation) for workers and clients alike. The effects of this one sided cost perspective: reduction of production of service-like outputs in society, reduction of wages of service workers, reduction of job opportunities, in particular for women and minorities. In the European union these problems are exacerbated because of the pressures to reduce the size of the collective sector. Many of the services are produced under a governmental umbrella. Reduction of that umbrella will intensify cost reductions and employment opportunities (Maassen van den Brink 1998).

Democracy. Work is an integral part of society. It has often been found empirically that people in 'active' jobs participate more completely in the social activities and politics of society than people in 'passive' and 'high strain' jobs do (Karasek 1976; Karasek and Theorell 1990; Pateman 1970). It is the Pateman-adage really: we learn to participate by participating. It works both ways: the structures of civil society impact on work place participation and workplace participation impacts on civil society. Work organization affects the democratic potential of society via activation of citizens for their political role in society through their experiences in work (De Sitter 1981). And, as Putnam (1993) showed in his study on the differences between Northern and Southern Italy, the success of the Northern economy depended heavily on the strength of its civil society, including its long and culturally anchored heritage of its democratic traditions.

Pivotal in the nexus connecting work place participation and participation in the wider society is the organization of work. It is not the market as such that promotes democracy. In fact, market economies have flourished in a wide variety of political settings. They are claimed for their capacity to promote the cause of freedom (Friedman 1962) and they are criticised for their tendency to undermine trust (Fox 1984; Fukuyama 1995; Gambetta ed. 1988). In our view, not the market is central, but the organization of work. The organization of work is the appropriate lever for enhancing workplace participation. Participation in the workplace, if genuine, is one stepping stone among others for keeping democracy alive. In the face of European integration and the democratic deficit in the European Union so far, reforming the world of work deserves a high priority.

3 Conducive production

We start with the observation that it is not natural resource wealth but human resource wealth which determines economic success (Porter 1990; Piore and Sabel 1984). This is not an innocuous observation: for us it is the base line for a fundamental critique of the usual mode of economic organization and its valuation.

Shifting the emphasis to developing human resources is tantamount to taking Adam Smith (1776) to task. Smith built an entire economic system on the base of two theses:

- the productivity of labor depends upon the division of labor;
- the division of labor depends upon the extent of the market.

The implications of these simple principles have had major societal consequences. In order to increase productivity, markets must be freed, among them, to be sure, the labor market. Freeing the labor market from all but the thinnest rules and regulations has been considered the absolute precondition for unleashing the productive potential of societies or 'nations'. As a consequence, labor, indeed, has been divided. Dividing labor, not just between companies and trades, but also within them, has been a dominant theme to the present day. Liberating the market with a view of deregulating the division of labor and its rules of the game, is up to the present day a major tenet in the advanced market economies. According to proponents of this view, the short happy period of the welfare state is a temporary interruption, rather than a fundamental change, in this development (and, incidentally, one of the more principled reasons why a European social policy is still in its infancy).

The time is ripe to revise the Smith-theses, and indeed, much of the ground has already been prepared. Studies abound as to the reintegration of labor (not 'de-skilling' but 're-skilling'), to the construction and the necessity of 'whole' and undivided tasks, to the expediency of breaking down hierarchies and functional boundaries in the workplace and between the workplace and the world of suppliers and customers. Work, in the newer mode, is not a matter of taking apart, of dividing labor; work is a matter of pulling together, of co-ordination and association of competent activities.

A widely quoted and very influential statement on these issues was made by economist Porter (1990). Porter distinguishes four categories of economic development:

- human capital development in a skilled labor force;
- resourceful networks of suppliers;
- active, demanding customers, and
- motivational factors emanating from economic institutions.

These four factors, indeed, neatly summarize the demise of the old model of the factory and the emergence of a new world of enterprise. During the eighties and nineties, the 'end of the division of labor' (Kern and Schumann 1984) has been proclaimed. Business strategies emphasize the importance of new, integrating perspectives on competency development at the level of company departments: 'core competencies' (Hamel and Prahalad 1994; also: Stewart 1997). Therewith, the first of the two Smith-theses on economic development has been discarded – at least in

theory. The revised thesis reads that the productivity of labor depends on labor as a coordinating and associative activity. What has happened with the second thesis?

There has been no comparable revision of the second thesis on market scale: it is dramatically in full force. The expansion of global reach by large multinational firms absorbing smaller enterprises to increase the extent of their markets is a process that has clearly been accelerating since the mid-1980's. Organizations merge and join to grow larger to meet the presumed competitive demands of increased global exposure (which, ironically, leads to *increased* division of labor between firms, and produces contrasting restrictive pressures on the breadth of labor). However, we claim that the goal of increasing profitability through market expansion presents a significant difficulty when the internal division of labor of the firm has so clearly changed. In our view, deployment and further development of labor in its new role as a co-ordinating and associating activity calls forth as the next step, an entirely new form of value from production, a form of value that points beyond the conventional market-based profitability and relations of competition. Then, certainly, Smith's logical inferences from the second thesis can no longer be upheld. In this new role labor is part of what we call conducive production. New forms of social exchange must also follow. We start with the production part.

By conducive production we mean a mode of producing that is 'conductive' because the output relates to skills, which are mutually induced in both customers and producers as they engage in production and exchange. Someone buying a software package and informing the producer about her experiences, the producer using the information to further develop the package, and so on, is one simple

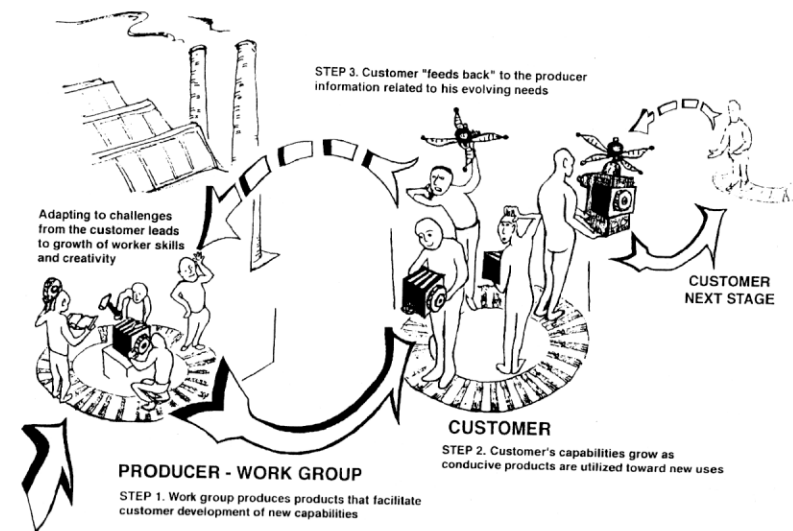


Figure 1: Conductive production

example. In the process of producing, exchanging, using, redesigning etc. the transfer is continually one of skills. Consuming the package is not the end of producing it, nor is producing the package the initiating phase of consumption. Both are aspects of a continuing process of association and coordination through skills, i.e. through the dual process of using and developing human capabilities. A simple diagram may help in illustrating the explanation:

The producing group on the left of figure 1 produces a 'tool-like' output, which enables not only successful attainment of the customer's original goal, but also the development of new needs for the customer's own production processes (for the even further customer on the right of figure 1). This, in turn, stimulates the customer to return to the first producer group with a demand for an ever more sophisticated tool. In this manner, conducive products generate their own demand, sustaining this type of economic growth.

In the model products are valuable, and thus deserving of social recognition, because they enable the growth of the customer's own productive capabilities. As such this is not new. New is the emphasis on human resources as the repository of wealth and value, and the relative de-emphasis of the role of natural resources. Not new is the fact that in many of the producer goods industries (a major slice of the totality of product markets) and in many services the transfer, and mutual development, of the skills of both producers and consumers is indeed the core of the business. We will give two examples (source: Karasek and Theorell 1990), derived from case studies, one referring to a producer good, the other to service.

Conducive production example 1: Sisu Truck Factory. The Sisu AB truck factory in Finland is a successful local producer of heavy-duty trucks for the Finnish market, where stiff competition is provided by international truck producers, such as SAAB, Volvo and Mercedes. This company, bent on increasing the customer-adaptability of its product, totally reorganized its truck assembly production facility in the early 1980's in order to accommodate production of a new truck design based on modular components. The reorganization process – from line production to decentralized, group-based assembly – represented a participatory change project involving all 250 assembly workers, together with the engineering staff, management and an organizational development consultant. The process gave workers a vividly clear overview of the whole truck production process – and led to autonomous work group based production. This eventually allowed most of the workers to participate in the construction of especially custom tailored 'prototype trucks' for local trade fairs that were crucial to Sisu's home-market success: a significant increase in capabilities and responsibility for most workers, and a significant contribution to the development of 'adaptive' trucking services in Finland.

New linkages with customers were an integral element of the reorganization.

Customer's company names, affixed to the routing sheets of each truck body as it passes through assembly, give workers motivating feelings of accomplishment, since they may personally know the customers in south central Finland. Customers are also invited to see the assembly of truck modules components in progress, when they pick up their own vehicle. This stimulates their understanding of how they might be able to use new modules or components to expand the use of their truck in the future. The Sisu truck becomes an adaptable product, which not only can grow with customer capabilities, but which enhances those capabilities.

Conducive production uses coordination mechanisms that do not need hierarchical control to link customers to producers and to organize workers into production tasks. Instead of a single, all controlling orchestra conductor, the entrepreneurial function will be taken care of at many points in the system, not just at a few. The present situation in the workplace often discourages workers from getting their own overview or personally engaging in integration with other workers, suppliers and customers. These functions are deemed to be under managerial prerogative. Workers are discouraged from learning the communicative strategies that would allow new interfaces between their respective skills. The goal of a job redesign process, as in the case of Sisu, then becomes the development of broadened types of understanding for workers who have been forced to start their working lives in one-sidedly specialized work settings.

The fundamental requirement of such a new division of labor is that the workers can themselves 'get the overview' and understand the potentials of new patterns of labor combination – and can evaluate different alternatives, so as to select the most feasible. Such can be done, as the Sisu experiences have shown. In other contexts also (Karasek et al. 1992) our participatory job redesign activities have used overview tools – both visual and diagrammatic – to stimulate the worker's own, action-based language development about work organization. Simply, we took photographs of individual workers, such that their own picture is diagrammatically surrounded by the multiple skill areas needed in their production unit, and use these pictures in discussions in the job redesign work groups. Invariably, when confronted with these skill templates, workers show that they have many skills beyond the one skill sector where they are actually employed. When we used such overview tools in practice among shop floor workers with little formal education in small manufacturing firms in Sweden, workers have dramatically increased their engagement in redesign discussions. The recombination and re-assembly of skills is a very feasible project indeed.

Conducive production example 2: Enskededalen Elderly Home. Enskededalen is a nursing home for the elderly in Stockholm, Sweden. In this home, an experiment was conducted to improve patient health by increasing the social competence and active coping ability of the patients. The idea was that care workers could stimulate

patient activity levels and engagement by learning about the patient's previous life-experience and building up a support platform of personally tailored activity. The new work routines, involving more direct social contact between patients and health care workers, increased worker participation in the scheduling of health care activities and activities around patient interest areas.

The experiment can be interpreted as measuring 'productivity' – the effectiveness of health service delivery – by assessing the impact on the patient's capabilities to engage in an active life. The important innovation here is the measurement of output in the form of the patient's capabilities (health as capability for activity). This is a measure of conducive value for the patient and a much better measure of productivity than the conventional ones like revenue per patient, or number of visits per week and the like. While the latter are easy-to-quantify and may reflect costs of labor input, they may have very little relation to the true output, the health of the patient (indeed, sometimes they have an inverse relation to patient health, cf. Von Otter 1985; Koepp 1987).

What were the 'productivity' results in the new format? Social activities did indeed increase significantly for the experimental group, when compared with the control group for whom everything remained as before. The nursing home patients were often found to be taking over organization of the activities – not just participating in them (a major increase in 'demand')! Significantly, the physiological health measures also confirmed health status improvement. Also, significant changes in job satisfaction by the health care workers were experienced. The rates of absenteeism displayed a clear trend toward lower absenteeism in the redesigned work groups after the first three months – almost a halving of the previous rates. The workers experienced a dramatic and positive change in their self-image. Rather than just dispensing medicines prescribed by others, they were now performing a true service for their patients, interacting with them and stimulating the development of their patients' and their own competencies.

From our two examples we can extract several defining characteristics of conducive production.

- Conducive production involves a broad recombination of skills at all levels. The specialized jobs in the current economy are the raw material for the alternative of a recombination of skills. In order to accomplish this 're-assembly', new integrative skills are needed.
- Conducive production is non-hierarchical. Specialized tasks must be coordinated hierarchically by managers; the new re-assembled tasks presupposes that workers are responsible for coordinating their own jobs.
- Conducive production links producers and customers through skills. Communication between producers and customers will be a many-faceted process between equals in status. Communication provides the feedback allowing the

workers to utilize and develop their skills. And it works the other way as it provides the customers with the possibility of expanding their expertise and acuity as users of the product or service.

4 Conducive value

This paper claims that the above new directions in coordination in work organization in the conductivity model are only consistent with a different model of economic value: conducive value. Conducive production adds value to 'growth-capable-entities', rather than adding value to inanimate, physical objects (commodities: wheat, oil, steel beams, even computer chips). Current mass-production process add value to an object by having laborers, for example, machine a piece of cast iron. But the commodity is 'dead', inanimate, with no developmental capability of its own. In the conductivity model developing entities, such as persons, organizations, and communities occupy the central logical position. For example, when a teacher helps a young pupil to read, or a doctor teaches an elderly patient how to care for his/her diabetes, it is the human being who gains the value of the expended labor. Creative and interactive social relations are an inseparable component of conducive value, but a meaningless characteristic for material objects.

The conceptual basis of commodity value in its object-form derives from an earlier era, when society's most valued outputs were indeed physical objects, mainly created by adding one's labor to natural resources – for example by farming a field to produce crops. John Locke, in 1690 (1988) defined 'private property' as that output of an individual's activity that society should be most concerned about developing, distributing, and protecting. Physical, concrete, observable, measurable, and bounded objects are the base of 'materialism' and of the modern age economic theory in Locke's wake. However, today's challenge is to develop *human resources*.

As an example of the profound difference that a 'living entity' form of value exhibits, we note that the standard economic calculations involving budget constraints do not hold for conducive value. For example, scarce goods (and all conventional goods must be scarce to satisfy the logical prerequisites of the theory) have zero-sum values: what one party takes in the budget, the other party cannot have. However, the value of education cannot be dealt with in this way. Lessons may be taught over and over to many individuals – never diminishing in utility for anyone, just because they have already been taught to someone else. Contrast the value of the 'skill of cake-baking' to the value in the 'cake' itself. The value of the cake is conventional: 'you can't have your cake and eat it too'. But you *can* teach cake baking to many pupils and not lose your own cake-baking skill in the process – indeed, your skill might be enhanced. In the conducive economy, needs are endogenous to the model. Needs are created inside the processes of production and consumption. In the traditional model needs are exogeneous; they originate beyond

the economic system as a result of pre-existing 'given' tastes.

Furthermore, skills – the capabilities of active entities- *associate* by their very nature. They are not bounded and limited like material objects, but expand and link to other skills. For this new form *value is in the association – it is not in the things themselves*. It can be the association of capabilities in a new configuration: the value of a 'team' of collaborators, the value of a well integrated set of computer programs, or the value of the elements of a good real estate investment package. A variant on the idea that the whole is greater than the sum of its parts, this new type of value arises from the special attributes of the input elements when they are viewed in combination – not in the utility of the original, separate capabilities independently. The association of capabilities has value because of its future usefulness as well as its present utility: it is a value model well suited to growth processes, and to long term development.

Conductive properties are the opposite of the bounded and concretely limited properties of commodities in the conventional sense. Packaged, bounded value is limited value, often limited in time as well. Commodities are (a) bounded so that they can be evaluated in the market, and (b) bounded so that they can be controlled and possessed. However, application of the conventional commodity form of value can inhibit productivity in current conducive value applications.

Human resources are beyond the rule of the conventional economic laws of scarcity. The concept of scarcity as we know it, may fruitfully be applied to natural resources, to 'things'. But it loses its edge in the realm of human resources. Or rather, the attempt to imbue human resources with the logic and rationality of the traditional scarcity concept leads not so much to the use of these resources as it leads to the erection of expensive and jealously guarded boundaries around their use. The urge to possess, needless to say, affects the very possibility of using, and the mode of using, the resources in question. An example may clarify the issue. The contest of Microsoft versus Sun Microsystems is our case in point. In this contest the fate of 'Java' will be decided. Java is a new computer language and it provides a series of functions – of new capabilities – that can operate on top of any computer's operating system. These functions perform the same services as the original system – and better, rather to the chagrin of the owner of the system, Microsoft. This company tried to restrict the applicability of Java by making sure that Java programs once run on a Microsoft based computer could thereafter *only* be run on another Microsoft based computer. Microsoft is now facing much negative publicity and significant governmental anti-trust action. If Microsoft wins, then it has proven possible to package a conducive program like Java. Packaging means, in this connection, to push Java into the regular commodity model, to make it 'scarce'. If allowed, this leads to reduction in the capabilities, in particular the possibilities for association, of Java and to render these subservient to the demands of in this case Microsoft. In our view, packaging Java is tantamount to considering it as just any

other thing, and to deny its unique properties of associating the resources needed and used in producing and working the program.

A fundamental property of the conductivity model is that needs stem from human capabilities that 'want to be used' in a socially constructive manner. Needs are not understood here as 'drives' that have to be satisfied no matter what. Rather, needs denote curiosity like in 'the need to know', 'the need to explore', the 'need to go at it' and 'the need to meet' or 'the need to visit'. Needs don't lock their environments in. Rather, needs are to explore the environments. Just like getting to know creates the appetite for more knowledge, whetting conducive needs is like skills begetting skills. Needs, that is, are not exogeneous to our model, as they are in the economic discourse. Needs are endogeneous. Their appropriate metaphor does not come from biological survival, but from jazz. Making jazz has been dubbed 'collective improvisation', and 'a New England town meeting', and 'a dialogue' among equals, the audience included (Marsalis 1996). Listen to jazz musician Curtis Fuller telling us about his reaction to shouts from the audience: 'When I get that message, the guy in the audience is saying, "I'm still there. Come on, run it by me again" (Fuller laughs), you know? Sometimes, I'll keep the thing going there. I'll deal with that phrase and expand on that, develop that. (...) And when I see those little interests tapering off, I'll say "All right now. Come on. Let's try something else and take it another way"' (Berliner 1994: 468).

To be sure, not all needs are like this. But a growing proportion of needs is of this type, and in our view it is about time that society would recognize their systemic nature and meaning. The Enskededalen example proves the point. The elderly did not need medicine so much as they needed activity and for that activity to come about they needed specific activities of themselves and of the care workers in their direct living environment. Needs in our model are consequently not 'final' in any meaningful sense of that word. In the same manner that consumption was described earlier, we hold that needs do not finalize a process, but propel it and bridge the n-number of rounds the process consists of. Needs are a 'moment', not a 'telos'. Needs are moments in a continuing process, they keep the process going, instead of starting and finishing it. Needs propel the act of producing and needs are – in an identical or a renewed form – essential in the communication going from consumption to production. They are part of the process and shaped within that process.

Conductive production implies a new market structure based on a new set of socially constructive behaviors linking producers and consumers. Such a new market structure may actually contribute to strengthening the social fabric. In the conducive economy the exchange process, the 'market', spans across the boundaries separating producer and consumer, to create direct contact between them. This process of boundary-spanning exchange enables: (a) user-friendly design and (b) effective communication of information of user's needs so that it will organize the producer's activity. Both (a) and (b) occur along the bottom arrow in figure 1

above. In addition, users can (c) teach producers about their needs in such a way as to encourage new productive initiative. Finally, (d) producers can teach users about their productive capabilities and enlarge in so doing the demand for their products. This, in fact, is very akin to the way commodity markets behave. Both (c) and (d) occur along the top arrow in figure 1. In different combinations, these lead to 'jazz-like' situations in which the use and the creation of skills merge.

Summarizing these sparing notes on conducive value, we get:

- traditional value concepts may be valid for the transformation of 'things', including natural resources. They lose their usefulness in the case of (human) capabilities;
- scarcity, as a concept denoting the strenuous relationship between means and ends, means being used up in the realization of ends, is not valid in the case of the use of human resources. Human resources grow when used, instead of being used up. In that respect, human resources resemble human needs. Of course, satisfaction of basic needs for food, shelter and security must be guaranteed. This is an essential precondition for conducive value development;
- conducive value associates the act of producing and the act of consuming. Using and developing the human resources of producers and consumers requires a new form of social recognition: a new form of value, conducive value. In that respect the present essay challenges recent notions such as Lean Production or Business Process Re-engineering that redesign jobs and even whole organizations within the traditional concepts of value and the associated relations of competitiveness.

5 The social context of a creative work organization

Basic security is a precondition for the creative forms of work activity like conducive production. Recent developments in the realm of employment relations have already led to increasing job insecurity and work-related exhaustion for many people. Such developments could undermine the feasibility of conducive production. Changes in the employment relations are called forth by new international relations of competition and by the enhanced mobility of capital. On the other hand, job insecurity is also the product of many restrictions on what may count as socially useful and economically meaningful activities. By this token, part of the answer to the job insecurity problems in the European union and in other advanced economic regions is a broader definition of meaningful work in society.

For one, a conducive economy can generate more jobs through the conventional economic dynamics of adapting to new and changing circumstances. This does not mean that a conducive economy will simply replace the existing commodity economy, for the conducive and the commodity economy can be constructively bridged:

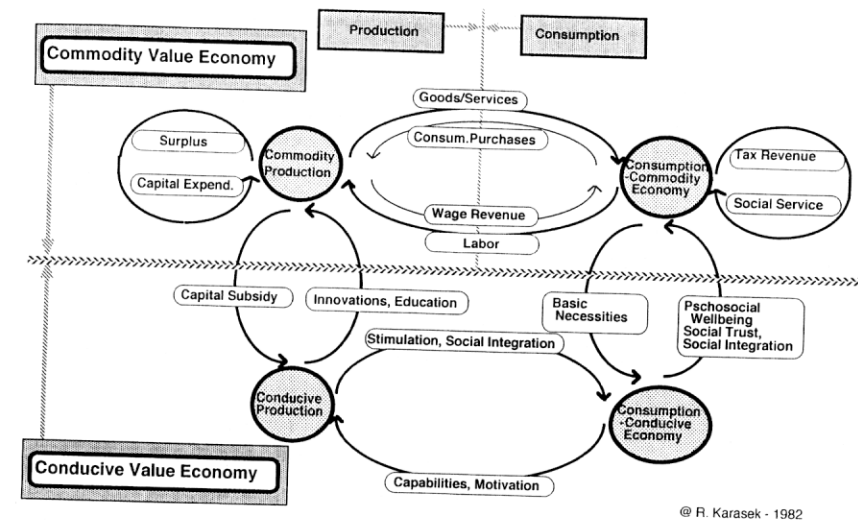


Figure 2: Bridging the conducive economy and the commodity economy

Effective integration of Work Quality-based, and of MOP and SWP policy orientations would take into consideration several specific transfers of value between the two major (i.e. traditional and conducive) types of economic activity. In figure 2, above, we can see how these two spheres could be integrated. The conventional commodity economy is on the top half of the diagram and the conducive economy is on the bottom half. Both have a consumption and a production (work organization) side. The commodity economy half of the diagram – a diagram similar to that appearing in first chapters of elementary textbooks on economics- shows the links between its two sides, in the form of one set of arrows for the consumption process, and another set for the production process. For the conducive economy, only a single set of arrows is used. Workers contribute capabilities and motivation, they 'receive' stimulation and social integration. The bridges between the economies show that these are not separate worlds or systems. Rather, the two economies complement one another. They are functional requirements relative to one another. The bi-directional vertical arrows represent this integrated contribution. On the consumption half of the figure (right side), the conducive economy contributes the psychic and social benefits that have been missing for consumers/workers in the commodity economy, while the satisfaction of biologically based needs is provided, as is the case today, by the commodity economy. On the production side of the figure (left half), the conducive economy generates the new technological ideas, the innovative products, and training for the workforce. In return, the commodity economy contributes resources to sustain the production structures of the conducive economy. Consequently, conducive production does not exclude the com-

modity economy (as the Sisu-example goes to show, and as many instances in, for example, the capital goods sector demonstrate), and the commodity economy does not exclude conductivity (as again, the Sisu-example shows, and, more in general, the production of unit and small batch commodities show).

The overall balance between conducive and commodity economy could be achieved in principle at several levels, and its achievement – *for each individual* – would be one of the major design challenges of a new economy. Many production processes could be redesigned to emphasize conducive benefits as well as commodity benefits, at the level of a company department, at the level of the company as a whole and at the macro-level. Of course, an important condition is that conducive production and value cannot be had without participation. Conductivity cannot be generated ‘efficiently’ in one location, and then distributed as a transfer payment to non-participants. It is as with a learning experience (action learning) that cannot be credited to a person who has not gone through the action of learning. The benefits may carry (or: spill) over, and they may trigger other benefits elsewhere. Yet, they cannot be had unless based in active participation.

There are major new distributional consequences in society: new groups of ‘winners’ (skill-developing jobs) and ‘losers’ (with stress and illness-inducing jobs) can be defined in terms of their conducive rewards from work activity (Karasek 1989). Therefore, an important principle would be that the whole of the occupational population has access to, and thus the the opportunity to participate in, conducive processes. A social equity criterion is badly needed. Many institutional design options are in principle available to achieve equity: rotation of individuals through different activities, rotation of roles over the life span, new forms of exchange between groups, etc. To be sure, not everybody will participate or will have to be expected to do so. A welfare state, or a functionally equivalent socio-economic platform, is presupposed, both for those who cannot participate as for those who can – if only to allow individuals to engage in the trusting and collaborative relationships that conductivity requires. However, in the conducive economy welfare policies are the *platform for, not the goal of*, social development.

The broader definition of value that comes from considering conducive production brings with it a broader definition of employment. This means more ‘jobs’ – by definition.

The MOP objection might be: ‘but you can’t make value out of nothing – like printing money, it just gives inflation’. But this objection is false, because these forms of value are real. As we saw in the Enskededalen home experiment, value was created that presently goes unnoticed and unmeasured not because it does not exist but because our way of recognizing productivity is designed for dead objects and not for living people. That example could be extended to include the larger part of the field of people caring for one another. Admittedly, if such a broader defini-

tion of economic activity was not consistent with yielding real value from these services, the idea might be impractical. Yet, and quite in general, conducive production expands the boundaries of what is classified as valid economic activity in society. It fits in neatly, then, with recent contribution to the Dutch debate on the boundaries of the domains of work and care (cf. Adriaansens 1996).

There are, then, worlds to win in reaping soft benefits and in fighting soft costs. This, however, is not the only challenge. At least as important is to design accurate jobs for the workers now excluded, for example due to partial disability. Happily, the Netherlands, thanks to its long tradition in sociotechnical experimenting, offers ample opportunities for the construction of such jobs, at least in principle. Requirements for good jobs for disabled people are, first, that they be low health risk. In fact, all jobs should be, but these ones in particular. Second, we should create ‘disability-curing’ jobs (health promoting jobs) which would prepare the incumbent for another job thereafter. The third requirement is that they be part of a broader economic program that can target these job improvements to disabled workers and generate a self-supporting economic development process.

There is a link between conducive production and the health status of modern society. In fact, today stress-related illnesses are on the increase, also in the Netherlands (Dhondt 1997). There is an urgent need to bring down the number and scope of high strain jobs. The policy to reduce disability-producing high strain jobs can be accomplished by taking hazardous and dead-end work and redesigning it as balanced and ‘active’ jobs, according to the Demand/Control/Association model (Karasek and Theorell 1990) and the Dutch instrumental practice, sponsored by the Labor Inspection, of the Well Being At Work model (WEBA, cf. Vaas et al. 1995; Christis 1998). These solutions increase the ability of workers to make significant decisions about planning and administering their work; to build creative collaborations with co-workers, supervisors and customers; to facilitate supportive social contexts and to maintain moderate levels of job demands. In the case of the health workers in Enskededalen the health care workers experienced a dramatic and positive change in their self-image as health care workers. And it paid. Absenteeism fell by almost one half in the job redesign groups after the first three months.

In an important sense the concept of conducive production and its accompanying concepts of work organization, job design and value, set out to complete the democratic processes inaugurated in the modern era. Democracy always was short of a practice of a democratic production process that was consistent with its goal of empowering all members of society. Democratic principles apply only to civil institutions – which are outside production. With, however, the actual need for a concept of work that activates people both as citizens and as workers (WRR 1997; European Commission 1997; Van Berkel et al. 1998), the possibility of leaving the workplace beyond politics is no longer there. The point is not whether we can still allow ourselves to discuss the workplace in non-political terms. That

discussion has run its course. The point is not *whether* politics but *which* politics. In that respect we have made a plea for considering association as the strength of democratic change processes. We claim that it is the experience in the workplace itself that 'molds' behaviors of individuals to be active or passive both at work and in society at large (Karasek 1976). The dilemma, noted above, that democracy may get threatened by the very free-market developments which it has fostered, can be resolved by building in 'active participation' as part and parcel of the social relations in the process of production and as bridges between producers and customers.

*) Robert Karasek is author of the longer original version (*Dutch labor participation and job quality policy: Defining new alternatives and new vision*. Den Haag: May 1996, Min. SZW-Arbo/ATB) of this article. Ton Korver extracted the present shortened article and inserted a few amendments. Advice and editorial assistance for the original manuscript was provided by T. Korver, E. v.d. Poel, H. S nderborg and N. Warren.

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