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THE NEED FOR AN INTEGRATED APPROACH: LESSONS FROM THE NEW TECHNOLOGY DEBATE

Changing conditions pertaining to work-related activities

In this paper we try to sum up the latest experiences of sociology concerning the work-economy-society triangle. Our basic questions are firstly, to look at how and why basic assumptions underlying the sociology of work are being reformulated, and secondly, to ascertain how far the discipline, in providing answers to these questions, is at the same time redefining its own relations to a changing society. We have to acknowledge that advanced technologies have opened up room for the conservation of the fordist-type mass production paradigm as well as for the development of the so-called "new production concepts" (e.g. flexible specialization) and for the emergence of network systems of hundreds of small enterprises. At the same time we are witnessing a world-wide decline in the trade union movement. It also has to be recognized, however, that this process is full of contradictions. Militant and leftist trade unions in some countries have begun to loose membership, while in some other - mainly Eastern - countries masses are supporting and trying to revitalize labour organizations which had earlier hardly shown any "sign of trade union life" (see Kasvio 1985; Reyneri 1987; Kalleberg 1988, Dubois 1988).

As has been pointed out in a variety of different international conferences during the 1980`s (Lake Balaton in 1984; Amsterdam in 1985; Bologna in 1986; Paris in 1988; Karlstad 1990), the development of social reality follows schemes different from those frequently predicted. While

the socially conditioned nature of productive innovations has been increasingly emphasized, there is a clear hesitancy within the social sciences to identify the trends and nature of the social development. For example, analyses of work organizations, informal relationships, the 'hidden economy' and the world of entrepreneurs have called attention not only to the persistence of professional and cultural traditions, family ties and bonds of local "micro-societies", but also to the indispensability of these kinds of premodern patterns for the functioning and viability of modern structures.

So we must distinguish between the processes of modernization and of the running down of the old social fabric. Our entire conception of development must be revised. We have to give up the exclusive use of globalizing, trend-like approaches in our thinking, and we have to discover within different social and organizational forms those types of mutations that in some respects point towards new social alternatives. It is a difficult task, because instead of recognizing global and homogeneous changes in production systems (e.g. the fordist, post-fordist types of production etc.) the researcher needs to have a comprehensive view of the segmented systems of social relations and of the fabric of various heterogeneous networks. Real scientific imagination is needed to deal at the same time with the complexities of the present and of the emerging alternatives.

We have been encouraged in our efforts to think along those lines by the work of industrial sociologists of different countries who, by the end of the 1980`s, recognized the need to break with various types of determinisms. Neither organizational and technological determinisms nor the determinism of the given social and political relations enables us to understand the vitality or inadaptability of different nations, regions, enterprises or social groups. At the same time the more complex comparative studies of different social and technological innovations together with

the debates about various "types of determinism" have made researchers aware that in terms of both time and space individuals are acting in several social formations. The forms of their individual and collective actions not only depend on direct organizational conditions, but also on such factors as value orientations, patterns of behaviour, traditions etc., acquired within the main institutions of socialization (e.g. family, school, enterprise, local community etc.), which all together shape the alternative reactions.

Human relations established simultaneously in several economic organizations and social networks serve to sustain already existing institutions and structures while forging new ones as well. In one`s life and working experiences the different social and economic formations are continuously linked through communication and information networks, which influence the processes of decision making and mobility. Apparently very different social institutions, structures and spaces are thus connected thorough human and social bonds. The spread of network analysis reflects that approach already present in sociology.

Some related works (Granovetter 1986) have revealed constant dualities between e.g. social stability and change or between the cultural determinism of behaviour and the freedom of autonomous actions in the social network. The presence of and the resource provided by the dual character of human behaviour is well described e.g. in the ways managers act in the firm: "The `managerial man` is not only the (co)creator (or perhaps more precisely: co-recreator) of this world of work and authority, he is also a `world closed` being, a prisoner of his life world through powerful processes of habituation and socialization. If he is weak on instinctual preferences, he is strong on institutional ones. He may be weak in relation to certain socio-cultural traditions; so the metaphor of `cultural puppet` is an adequate one in descriptions and analyses. The paradoxical situation implies that he is not only the (re)constructor of

his world, he is also constructed by the same world." (Kalleberg 1990)

The reappearance of technological determinism in the 1980`s

By the end of the 1960`s, the analyses of the social impact of technological development appeared to have definitively disproved both the optimistic and pessimistic versions of the concepts of technological determinism. High-standard engineering work has not become generalized through the scientific-technical revolution, nor did automation reduce man to the status of a robot. Research revealed the combined effects of management systems, organization of work, and of the social and political environments in the most diverse cases of technical development.

However, by the 1980`s, the long-standing dispute flared up again, this time on the social impact of the industrial application of microelectronics. Radical changes in employment and in skill levels have been expected with the "third industrial revolution". The following quotation from a Japanese study on the social effects of microelectronics reflects the view of many other researchers, including Hungarians: "Industrial robots, numerically controlled machines (NC-CNC machines), computerized design and manufacturing (CAD-CAM), flexible manufacturing systems (FMS) and the automation of office work (OA) serve to radically change the content of work, the work organization and the structure and strategy of management." (Okubayashi 1986, p.7)

The social and organizational effects directly attributed to the application of new technologies based on microelectronics are treated on a more differentiated manner by those who speak of "new models of production" or "new production concepts" (Kern-Schumann 1984), pointing out that the fordist type division of labour and specialization is called

into question even as regards the efficiency of capital utilization, and that the role of qualification is being upgraded in the advanced sectors of production (car industries, machine tools and chemical industry). The substance of highly influential post-industrial approaches consists in the fact that - given the increasing flexibility of new production technologies - the appropriate operation of the production apparatus requires workers to reinforce their commitment and to acquire higher levels of skill and management to abandon the practice of restricting the utilization of workforce creative abilities.

Approaches of this type suggest, however, that the very emergence of the new technologies is bound to evolve new sets of social relations. For instance some studies indicated that trust is replacing interest relations among the social partners of industrial relations. The majority of unions are naturally sceptical in relation to the above-mentioned shifting nature of workplace relations, but at the same time they are expecting a future upgrading in the qualification of workforce and in the development of team-work. Social scientist`s opinions about the "New Production Concepts" are also very contradictory within the German scientific community (Dull 1985). But we have to acknowledge that the recently emphasized and analyzed trust relations may help researchers in extending the cultural and historical aspects of their descriptions of industrial relations.

Empirical objections against the new determinism

In the course of such debates rather strong objections to the neo-deterministic views have been formulated. One class of objection relates to the interpretation and measurement of qualification. (Bernier-Cailloux, 1985) Analyses of the relationships between qualifications and new technologies

often use identical terms with different meanings. The most frequent source of confusion is the failure to differentiate between formal and substantive apspects of qualification.

Formal and quantifiable criteria indicate the level of workforce qualification (schooling, education, practice), and they support descriptive analyses of workforce structures with typical questions being formulated like "What occupations are needed? What occupations are to be expected to disappear? What professional requirements are raised by an effective operation of different forms of new technology? What system of training is able to turn out labour of the required structure?" On the other hand, the substantive criteria of qualification refer to the patterns (structures) of tasks actually performed, with the questions formulated to grasp the degree of specialization of tasks, the totality of aptitudes and skills required by them. The following combination of activities, for instance, proved to be of advantage to identifying the substantive dimensions of qualification in analysing relationship between technologies and qualification (Simonyi 1987a):

1. Transformation of objects and materials,
2. Treatment and transformation of information,
3. Operative activities,
4. Tasks involving managing and organizing of cooperation.

The second type of objection to neo-deterministic views relates the social implications of new technologies neither to the individual job level nor to the advanced sectors only, but to the totality of the production system. They use the concept of so-called "integrative" or "systematic" rationalization which aims at the central issues of flexibility, quality assurance, etc. - as was the case with the `new forms of work organizations` of the 1970`s or with the `new production concepts` of the 1980's. Their prime objec-

tive is to make the entire manufacturing system more productive and efficient beyond individual processes and plants and to reduce the capital fixed in the system." (Altman-Dull 1990, p. 14)

The various approaches of research on new technologies can be observed in the Hungarian sociology as well. After describing the diffusion of technological innovations (microelectronics, robots, etc.) and the basic changes in work-organizations, industrial sociologists mainly focused their attention on the social dimensions of the spread of new technologies. For example, research in Hungary has shown that the advanced (information) technologies integrated into the traditional enterprise organization have not modified patterns found in the division of labour: skills and the control of the labour process have been produced along the lines of the former power structures and managerial practices, and they have thereby failed to lead to new, economically more efficient uses of manpower. Neither have the new technologies been able to bring about a larger social consensus for the groups of employees involved in technological changes (Nagy 1987).

The experience of joint Hungarian-French comparative research on the use of information technologies in the clothing industries refers to a certain "technological relativism". Our observations did not prove the very existence of the "flexible specialization" thesis: in these industries the introduction of information technology was characterised by the tayloristic, fordist-type rationalization, and it did not promote up-skilling or versatility of knowledge of workers affected by the changes.

In the present situation, the researchers also could not verify any clear tendency of strong deskilling (partly due to the incomplete use of automation by information technology). Concerning the hypothesis of "effet societal" - a comparative research concept developed by the LEST group in Aix-en-Provence, according to which various societal and

cultural factors may structure the firm`s decision-making system and the conditions of use of the new technologies in each national context (Maurice-Eyraud-D`Iribarne 1986) - we have found such an approach of limited usefulness due to important differences among the firms investigated within the same national context.

This means that there are not any Hungarian or French models of investment or work organization policy: there are certain similar (new requirements of international competition) and different (financial policy of investment, labour market situation etc.) constraints in both countries, and naturally there are also certain country-specific factors influencing ways of organizing work in each of the two countries. The main characteristics of our hypothesis are, however, as follows: the changes or lack of changes related to the implementation of the new technologies are a product of interest conflicts among the social partners in relation to modernization and also in respect to the various levels of regulations. These conflicts are shaped both by the national context and by the specific history of each firm's labour relations and managerial practice. The social and organizational circumstances of the use of new technol-ogy were more similar between the two countries' enterprises than between the firms within the same nation (Mako-Berki-Dubois 1990).

Those sceptical of predictions about the "end of the divison of labour" even raise a question mark over the scope of new production models. For the time being some studies have found certain new models of labour utilization operating in the central and economically strong sectors in the advanced capitalist countries, but no reliable empirical basis for generalizations exists even in those sectors. At the same time management and labour are endeavouring to establish new structures of work and cooperation, which also can be observed in declining industrial sectors. Such endeavours are able to appear in some cases e.g. through de-

centralization or internal subcontracting, and even to result in formally new work organizations or new models of labour utilisation and cooperation. (Kasvio 1986, Neumann 1988) In other cases, however, under conditions of the lack of market pressure from both product and labour market sides, and without autonomously functioning trade unions, strong social forces were able to challenge the existing patterns of the division of labour within firms. (Fazekas 1980, Laki, 1984-85, Lado-Simonyi-Toth 1986)

In addition to the flexible forms of work organization attributed to new technologies and to the upgrading of skill in the leading sectors of industry, reference should be made to trends detected to other spheres of the economy. Rather different social and organizational developments can also be observed in numerous areas of services. The organization of work in the spirit of Taylorian and Fordian organiza-tional techniques is spreading in, among others, tourism, financial institutions and in health care.

Combinations of organizations designed to ensure a relatively rapid integration of labour requiring a minimum of qualification with new technologies are found with increasing frequency in the entertainment industry as well. (Walton 1985) At the same time, in the process of introducing technological and organizational innovations, the third sector has been strengthened and expanded by small and medium sized businesses which, providing various technical, financial, marketing or legal services for the enterprises, have followed models radically different from those formerly evolving within the framework of large enterprises. (Simonyi 1987b)

Thus, debates both before and during the 1980`s tend to support the experience that the emergence and spread of new technologies, organizational methods of innovative management and of new models of labour use are processes far from being parallel and necessarily interlinked. On the other hand it is justified to make a distinction between techni-

cal-technological and social-organizational innovations, as these are likely to force their way independently of each other and as these emerge mainly from different social games of the partners involved. The research findings and lessons of scientific debates point - just as they did in the 1960`s and the 1970`s - to social interrelationships much wider than the traditional man-machine and man-work organization relationships. Assessment of the substance of technical and organizational changes in the labour process has been found even today to require a combined analysis of the operation of processes at the plant or enterprise level as well as at the social and economic institutions level.

From segmented to integrative analysis: the need for an explorative sociology

The methods and theoretical frameworks of such "complex analyses" have yet to be elaborated, however. The discovery of wider interrelationships often leads to new determinisms: to descriptive analyses of higher hierarchical levels above the enterprise "micro-world", or of widening concentric spheres of the economic and social environments, attibuting a decisive influence to both domains.

The efforts of Hungarian scholars during the 1970`s were started on a double track to deal with two sets of problems connected to technological and organizational changes: with the Industrial Relations System, i.e. the representation of worker`s interests, participation and shop-floor democracy on the one hand, and with the second or black (informal) economy on the other.

The line of research concerned with Industrial Relations analyzed enterprise processes, i.e. the political and legal opportunities, frameworks and limits of interests and power struggles relating to technological development pro-

jects; it revealed essential social interrelationships connected with political struggles. Research on the second or "black" economy for its part studied more thoroughly the relationships existing between enterprise processes and the society and economy outside the factory gate, i.e. factors which form the interests and behaviours of both labour and management. At the same time, labour utilization as well as the possibilities and limits of technological and organizational changes were analyzed in the context of the type of segmentation found in the labour market.

Indeed, technological or organizational determinisms have been disproved by integrated analyses and assessments of the labour process and of the set of Industrial Relations. Studies limited to relationships within the la-bour process could not explain, among other things, why workers at large Japanese enterprises do not react with stoppages or some forms of quota restriction to managerial methods of increasing labour intensity, e.g. to the planning of production with a minimum of workforce and stock (The Kan-Ban or Just-in-Time managerial method) (Dore, 1987). In Hungarian industrial practices such methods would give rise to individual and collective actions interrupting production rather than to an increased individual and collective performance or to strengthened cooperation within the given group of workers. Furthermore, the lack of different reserves serving to secure the continuity of production would tend to strengthen the position of workers versus management (Simonyi, ed. 1983).

The opposite managerial and labour reactions to identical phenomena cannot be understood from the point of view of the labour process alone; rather their understanding requires a combined analysis of internal relations of enterprise organization, of labour and product market situations and of the social and political methods of resolving work-related conflicts. In that process of analysis, however, the researcher cannot stop at the tracing of interest relations at

the workplace and of the outcomes of power struggles back to the existing set of Industrial Relations; in doing so, she or he would be lured into the trap of another kind of determinism - although wider than the technological or organizational ones.

The studies on extra-firm channels for action, on mobility within the labour market and even analyses of family, cultural and community interlinkages of informal relations have all demonstrated that the means and methods of conflict management or the mechanisms destined to resolve conflicts are not confined to representative institutions established in the course of social struggles and/or out of political wisdom, to negotiations between social partners that are institutionalized and legally regulated. Individuals or social groups reacting in the context of a specific problem, and the efficiency of their actions, cannot be understood merely in their direct social space, i.e. in their immediate environment of action, but rather must be understood in relation to and in combination with the conditioning roles of norms, patterns of behaviour, interests and possibilities for their representation existing in all other spheres of society. This means that the strategies of the social partners in the labour process depend not only on the objective-structural dimensions of their industrial practice, but also on "soft-subjective" conditions such as perceptions, values, behaviour patterns etc. acquired by social learning in different processes of socialization.

Reactions of different social groups are to be observed in several dimensions: they are carrying social contents which cannot be interpreted in one single developmental model. Similarly in one single dimension of research, like within industrial organizations, we must distinguish segmentation along different "external" social relations.

The recognition of social and organizational heterogeneity is a necessary precondition for an adequate description of the functioning of various economic formations;

but the expoloration of the logic as well as the mechanisms that are inducing social and organisational changes represents but a first step. For such an - let's call it - explorative sociology we have to find those "paths" that connect the social, organisational and cultural spheres of different types, through which people communicate, gain experience, express their intentions and coordinate their actions.

Such an approach in organisational sociology was elaborated by F. Butera when he distinguished seven different strata within industrial organisations. These strata have their own limits, members, orders of negotiations and communications as well as potential pressure groups. In this interpretation innovations and workers' and managerial strategies in the processes of their implementation consist of series of cumulative changes in the various segments along different values and behavioural patterns. The positions, relations and communication of individuals in the different strata of the organisation help them to formulate their collective actions.

The most important lesson for us is the need to explore human relations in terms of various sets of social relations carrying different contents, rather than subsuming them under any single dominant form of production, and to do this in the context of forces and counterforces, interests and counter-interests.

References

Altmann, N., Düll, K.: Rationalization and Participation: Implementation of New Technologies and Problems of the Work Councils in the FRG. **Economic and Industrial Democracy** 11, 1990,

Bernier, C., Cailloux, C.: Les qualifications: un enjeu des nouvelles technologies? **Institut de Recherche Appliquee sur le Travail**, Montreal 1985

Clark,T.: Automation and Craftwork? Paper presented at the **ISA World Congress of Sociology - RC 10 New Managerial Strategies, Technological Changes and Democratization**, Madrid, Spain, 9-13 July 1990

Dubois, P.: A munka es az uj technologiak, **Ergonomia** 1985, No.1

Düll, K.: Gesellschaftliche Modernizierungspolitik durch neue "Produktionskonzepte"? **WSI-Mitteilungen** 38, 1985 (3)

Fazekas, K.: Ber es teljestimeny targyalasok a belso munkaeropiacokon. **MTA Kogazdasagtudomanyi Intezet Tanulmanyai** 1984, 23, 27-52

Granovetter, M.: Economic Action and Social Structure: The Problem of Embeddednes. **American Journal of Sociology** 91, 1985, 3, 481-510

Kalleberg, R.: Workplace democracy and economic democracy. **Centre of Socialist Studies of Israely Labour and Kibutz Movement**, Haifa, 7-12 January 1988

Kalleberg,R.: How can business firms be made to act in a more socially responsible way? **Institute for Social Research, Working Paper**, Oslo 1990

Kasvio, A.: A New Stage in the Development of Industrial Work. **Research Institute of the Social Sciences, University of Tampere, Ser. D** 81/1985

Kasvio, A.: Industrial Restructuring in the 1980`s and the Theoretical Reconstruction of Industrial Sociology. **ISA RC 30: Sociology of Work, Jablonna 1986**

Kern, H., Schumann, M.: Vers une professionalization du travail industriel. **Sociologie du Travail** 1985, 4

Lado, M., Simonyi, A., Toth, F.: From Taylorism to New Forms of Work Organization in Hungary. In Grootings, P., Gustavsen, B., Hethy, L.(Eds.): **New Forms of Work Organization in Europe.** New Brunswick 1986

Laki, M.: A kenyszeritett innovacio (Muszaki fejlesztes az eladok piacan). **Szociologia** 1984-85, 42-52

Mako, Cs., Berki, S., Dubois, P.: Changements techniques et politiques d`entreprises dans l`industrie de l`Habillement. In Dubois, P., Koltay, L., Mako, Cs., Richet, (Eds.): **Innovation et Emploi a l`Est et a l`Ouest (Les entreprises hon-**

groises et francaises face a la modernisation). Paris 1990, 87-111

Maurice, M., Sellier, F., Silvestre, J.J.: **The Social Foundation of Industrial Power.** Boston 1986

Nagy, K.: Technology and work in Hungary: technical innovation without organizational adaptation. In Grootings, P., Francis, .(Eds.): **New Technology and Work in East and West Europe.** Wien 1987

Neumann, L.: Piaci viszonyok az uzemi beralkuban? **Gazdasag** 1988, 4.sz.

Okubayashi, K.: Work Content and Organizational structure of Japanese Enterprise under Microelectronic Innovation. **Kobe University, School of Business Administration**, Kobe 1986

Pontusson, J.: The Micro and Macro Politics of Industrial Innovation: A Comparison of Volvo and British Leyland. In Clark, T.: Automation and Craftwork? **ISA World Congress of Sociology - RC 10.**, Madrid, Spain, 9-13 July 1989, p.7

Reyneri, E.: Innovazione produttiva - societa heterogenea. Paper presented at the **Conference of Italian Industrial Sociologists**, Milan, November 1987

Simonyi, A.: **A teljesitmenynovelse feltelei a munka-szervezetben.** ABMH Munkaugyi Kutato Intezet, Budapest 1983

Simonyi, A.: **Tarsadalmi, politikai viszonyok az olasz kisvallalkozasok fellendulese mogott.** MTA Szociologiai Kutato Intezet, Budapest 1987 (1987a)

Simonyi, A.: **Az olasz nagyvallalatok alkalmazkodasanak tarsadalmi szabalyozo mechanizmusa.** MTA Szociologiai Kutato Intezet, Budapest 1987 (1987b)

Walton, R.: From Control to Commitment in the Workplace. **Harvard Business Review** 1985, March-April

Work and Welfare: International Conference organized by the University of Karlstad, Karlstad, Sweden 1990