INTRODUCTION TO

WORK AND ORGANIZATIONAL PSYCHOLOGY

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CHAPTER
EIGHTEEN

THE CHANGING NATURE OF WORK

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Contents

Chapter Outline

This chapter covers plausible developments in the way jobs and work will be done in the future. In addition, the chapter addresses the question of what interesting research and practical issues for work and organizational psychology will appear in the future.

Introduction

Students in university today will work in the organizations and companies of the future. Thus, the question of changes in the nature of work is of paramount interest to students. There is no doubt that the world of work is changing. If a worker from the late nineteenth century was catapulted into a modern workplace, he or she would have difficulties understanding it: its speed, the emphasis on timeliness of production and service, the technology used, the cleanliness and safety, the emphasis on customer satisfaction and quality, the modularity of the products, the non-military nature of the organization, the courtesy and at the same time distance in social relations at work (including relations between men and women, and between different ethnic groups), the speed with which product lines are changed, the international nature of production and of the workforce, and relations with foreign companies (this can be seen from the writings of Taylor, 1911; Ford, 1922; Marx, 1967; Licht, 1983).

In short, work life has undergone tremendous changes within the past 100 years. This chapter asks the question: what kind of research is required if work and organizational psychology is to be able to deal with future problems? Thus, we want to know what changes the next 50–100 years will bring about. Only two things are certain: first, it is very likely that we will make erroneous forecasts; second, some of the changes will take place much more slowly than we expect. As evidence for the first statement, just think of the fact that, at the time of writing, people had just become accustomed to the fact that the East Asian tigers (Thailand, South Korea, Hong Kong etc.) were the inevitable leaders of future markets when the crisis in these countries led to a serious economic depression there. All the forecasters who thought of these markets as the most important ones for the future turned out to be wrong (at least for a certain period).

As evidence for the second statement, think of the fact that at the beginning of the computer revolution (starting in earnest in the late 1970s, with the advent of personal computing), it was estimated that human intelligence would soon be replaced by computer technology (e.g. Feigenbaum and McCorduck, 1984) and that a paperless office would develop. Neither of these two predictions has come true. However, there are developments in that direction. In rule-governed areas computer-supported decision-making has become more commonplace

(e.g. stock exchange, medicine, technical supplies, logistics) and in specialized non-work related areas (e.g. chess) computer intelligence has made tremendous gains. Similarly, there has been more and more use of electronic databanks, although this has not led to or even approached the paperless office.

Future Prediction: Methods and Perspectives

Most frequently, people tend to extrapolate from current trends. For example, in the 1960s, there were numerous futurists who extrapolated energy use into the future and predicted that all fossil energy would be depleted in the early part of the twenty-first century. In the meantime, new technology and the energy conservation movement have helped us to conserve energy to a large extent; in addition, new energy technologies have been developed. Thus, while we all have to use extrapolations to make predictions for the future, we should be cautious, and also describe the counter-forces to these extrapolations.

Catastrophe and chaos theory and system perspectives (Buckley, 1968) have emphasized two issues. The first is that small developments can have enormous effects, even in other places. The fact that Hitler was rejected as a student in an art school may have led him to become a politician, with enormous consequences. Small causes may have large effects that are difficult to foresee. Second, there are counter-movements by systems, which work against certain trends that appear obvious. A good example is the effect of the computer revolution in the office. In contrast to strong cost savings projected by the computer industry, there were essentially no savings. However, quality standards for written and oral presentations increased: just think of the fancy multi-coloured overheads or the near professional printing quality of reports common today, which were out of reach for most office workers twenty years ago. Thus, the system (in this case office work) did not lead to cost savings, as anticipated, but to higher quality reports.

In addition, there are two limiting conditions for changes that are inherent in every system. First, organizations are conservative (Katz and Kahn, 1978). New technology research has shown that the potential of new technology is usually not realized at once. At any one time, the organization uses an evolutionary approach (Pomfrett et al., 1985) and changes the work situation only a little. Therefore, the changes are usually much smaller than one would expect (Kling, 1980; Agervold, 1987; Frese and Zapf, 1987). Another system characteristic that leads to inherent conservatism is human nature (Nicholson, 1998). As Nicholson shows, any attempt to reduce hierarchies in organizations may produce counter-tendencies, by which hierarchies develop even when 'non-hierarchical structures' are advocated. Human nature may tend to reintroduce hierarchies even if they are counterproductive.

A further approach to the attempt to understand the future of work is to research jobs at the cutting edge of new technology and new organization empirically. The best model for such jobs is software design because software designers work with very new technology and most new and interesting organizational approaches have been attempted there. Some findings on this profession are reported in this chapter.

The scenario approach has also been used to forecast the future. It asks the question: which alternative scenarios are plausible and how are alternative trajectories of developments developed based on these scenarios. For example, what will happen to future workplaces in Europe if the influence of the labour unions collapses across Europe in the same way as it did in the United Kingdom? Or what will happen to workplaces in Western Europe when Eastern Europe is integrated into the European Union? This is a plausible approach that helps to make the prerequisites of our predictions more explicit.

These introductory statements are intended to make us sufficiently humble with regard to predictions of the future. Having said this, I shall now venture into looking at potential trends at the workplace, potential counter-forces and potential consequences. One reason for looking into the future is to ask the question: which issues should be studied by work and organizational psychology to help to solve new problems when they appear.

Trends that Describe the Job of the Future and Consequences for Work and Organizational Psychology

The following points constitute a summary of the trends discussed in the literature (Storey, 1994; Bridges, 1995; Howard, 1995; Rifkin, 1995):

- dissolution of the unity of work in space and time;
- faster rate of innovation;
- increased complexity of work;
- global competition;
- development of larger and smaller units;
- changing job and career concepts;
- more team work;
- reduced supervision;
- increased cultural diversity.

These trends are discussed below.

Dissolution of the unity of work in time and space

With the advent of the Internet and computer-based work, it has been possible to overcome restrictions imposed by time and space. For example, I have written a paper with two American colleagues whom I had never met before; we communicated only via e-mail. Some car designers already work on a 24-hour schedule: when the designers in Tokyo stop working, the European designers take over. When they stop their shift in the evening, their American colleagues continue where the Europeans have left off. At the consulting firm

Anderson in Paris, people do not have individual offices any longer, but are assigned an office whenever they need one. Within minutes, their individual filing cabinet is rolled into this office and their own telephone number and e-mail connection is installed. A final example of a virtual office can be found at Pacific Bell Directory, which had a special contract with a hotel chain, built up its own offices there and asked its salespeople to work from hotel rooms (using a modem and phones as tools to connect to the main office) (Goves, 1995; Wigand et al., 1997). In the USA telecommuting is used more frequently than in Europe, with 11 million workers using this mode of distributed work at least part of their time (Cascio, 1998). Obviously, telecommunication is a broad concept that includes the use of e-mail and sophisticated groupware with concurrent video-conferencing.

There is enormous potential in the fact that one does not need to be at one's office to be able to work with other people. People using telecommuting seem to like it and prefer it to working in an office; they even argue that they have fewer distractions and work more productively (Chapman et al., 1995; Cascio, 1998). Productivity was found to be enhanced by 2–40 per cent through teleworking (Chapman et al., 1995). However, these positive effects have been recorded up to now only in situations where people volunteer for telework (Chapman et al., 1995). The position may change when people who do not want to participate in telework are forced into it.

There are many counterforces to the widespread use of telework. Some forms of work carry legal requirements that make it difficult to use telework. For example, many bank and insurance jobs cannot legally be done from home, because privacy cannot be ensured in the homes of the teleworker (this is certainly more important in Europe, with its strict privacy laws, than in other parts of the world). Similarly, many managers and business owners want to *see* their employees at work with their own eyes. Many organizations do not want to invest in an uncertain technology and assume that it will be difficult to keep up organizational commitment. On the other hand, certain political decisions have made it necessary to invest in telework; for example, the decision by Germany to distribute the capital across two cities (Bonn and Berlin) has led to a need for information technology to deal with decision-making across these two cities (Schmidt and Wolf, 1997). In all, there is little doubt that telework has been growing, that it has been profitable where used and that it will continue to grow in the future.

Obviously there are important implications for work and organizational psychology that derive from the 'dissolution of the unity of time and space at work' that accompanies telework.

- There are problems of coordination. How can the organization make sure that everyone knows his or her tasks? Tasks that require fine-grained communication are better done face to face than in computer-mediated groups (Straus and McGrath, 1994).

- How do organizations overcome the problem of reduced organizational commitment? Telework reduces the chances of feeling that one belongs to the organization (Chapman et al., 1995). Of particular difficulty is developing a common culture in virtual organizations.
- Communication patterns change when the computer is used (at least to a certain extent). There is a large literature in this area, which I will not summarize here. There is some evidence that communication becomes more democratic because status differences cannot be conveyed as vividly via the computer as in face to face communication (Kiesler et al., 1984).
- How can a culture of telecommunication be developed and furthered? At the moment, there is evidence that people use rougher and less sophisticated language when typing something into the computer.
- There is an overabundance of information in today's telecommunication systems. Obviously, a large amount of what one receives is not really important. How can these systems help to differentiate uninformative garbage from information that is needed?
- In what phase of work do projects get better or worse support through computer-based groupwork?

Faster rate of innovation

There will be more pressure to innovate (Kanter, 1984) because of pressures from the global market and because the time available to create new products from new knowledge is reduced. Hamel and Prahalad (1994) have argued that competition between firms will be more and more on 'opportunity shares' (shares in future markets with products that may not exist yet). This is of particular importance for European countries, which have fallen behind the USA and Japan in terms of innovativeness and patents.

There are various implications for work and organizational psychology. First, we need good models of individual and group innovation to support innovatory behaviour. There tend to be two types of models. One is related to the creative element of innovation. A good model for group innovation (West and Anderson, 1996; West et al., 1997) showed the importance of group reflexivity and support for innovation. For individuals, this perspective was developed by, for example, Oldham and Cummings (1996). Another approach relates innovation to personal initiative: to achieve innovation, one has to have a good idea; but in addition it is necessary to implement the idea, which requires personal initiative (Frese, 1997).

Second, it makes sense to differentiate between process (how to produce) and product innovation; different psychological processes may apply to these two types of innovation. Third, work and organizational psychology can contribute to helping people to learn faster. We will have to change how we carry out training. The traditional training literature has rightfully argued that it is necessary to do a task analysis first. However, the change of work perspective

in this chapter implies that tasks will change so quickly that it will be difficult to train for specific tasks; instead, people need meta-skills. This poses a dilemma: we know that it is very difficult to train general skills because transfer to new areas is difficult (Baldwin and Ford, 1988). We need to learn much more about how to develop transferable skills. The most probable starting point is to train for self-regulation (Karoly, 1993). If, for example, we have to boost our motivation to approach a new situation with curiosity when we really do not want to, self-regulatory processes apply. Another starting point is to teach people to train themselves (or at least to feel responsible for their own training needs). A learning approach may be triggered by the occurrence of errors and problems (Frese, 1995a). However, it is likely that people will learn from an error only if they do not feel anxious about making errors and do not feel the need to cover up errors (Rybowiak et al., 1999).

This leads us to a point of organizational learning. The organizational culture itself must support learning. New strands of research are required here; one important issue is the error culture, which determines whether people feel at ease discussing errors, and, thereby, learn from them. It has been shown that companies with a mastery-oriented error culture are more profitable than those with a timid error culture (Van Dyck et al., 1998). A learning organization needs to support curiosity, there needs to be safety to explore (West et al., 1977) and general uncertainty avoidance needs to be low. Uncertainty avoidance (Hofstede, 1991) may be of particular importance for learning. Under high uncertainty avoidance (such as exists in Germany), there is probably a high drive to learn from mistakes so as to not repeat them. On the other hand, there is little room for exploration because people want to be sure that they can do something well immediately. Thus, learning from an error is restricted to an anxious avoidance of the error, and errors are not really used as a trigger to learn something new about a system. On the other hand, in cultures with low uncertainty avoidance (e.g. Ireland), there are many chances to learn, but motivation to get it right after one has made a mistake may be a little lower. At present, we know very little about these processes.

Organizations can succeed as learning organizations only if they encourage and support curiosity among their members. Everything that increases curiosity will also increase innovation. This means, of course, that companies like 3M, which forces its employees to spend a certain amount of time dreaming up new products or ideas, will in the last analysis do the right thing. On the other hand, companies tend to reduce time pockets that can be used for such a pursuit of ideas with better (and tighter) organization. Thus, at some point in time, innovation may be hindered by the very effectiveness of the organization.

Increased complexity of work

While there is little effect of new technology *per se* (Kern and Schumann, 1984; Frese and Zapf, 1987), changes in work organization interacting with new technology will make work intellectually more demanding. Moreover, since the rate of change is increasing, this implies that new knowledge has to be acquired constantly.

The factors that contribute to an increase in work complexity are production for small niches, customization and customer orientation. Most car companies already work on a principle of demand, with each car being specified individually and separately. Complexity of work also increases because of increasing environmental turbulence and ever faster developing fashions and global changes. The most important implications for work and organizational psychology are in the following areas:

First, what can be done for less intelligent people? Complex work presupposes a high degree of intelligence (Ree and Caretta, 1998). Thus, jobs for less intelligent people will become scarcer and scarcer. Worldwide competition will increase and modern technology makes it possible that work will move from the industrialized world to the underdeveloped world. This produces serious problems in the industrialized world; for example, a continuously unemployed lower class, with a welfare mentality, high crime rates, social unrest and widespread dissatisfaction. We do not yet have a solution but work and organizational psychologists need to develop one. This may mean searching for job characteristics that do not need a high degree of cognitive ability and it may mean that those jobs will have to be economically subsidized in some way. It may also be useful to develop improved and fine-tuned concepts of training for this group of people.

Politically, there have been two approaches to this problem. Neo-liberalism attempts to reduce the wages for this group to a large extent (making them comparable to the Third World and, thus, competitive again). Social democracy attempts to keep up the wages for this group; however, to induce companies to employ them, jobs have to be subsidized. Moreover, there has been a trend to force people into work (e.g. in Denmark).

Second, a similar problem appears for people who are not very socially competent. The increase in customer orientation makes it necessary to employ people with good social skills. While social skills can be more easily learnt than cognitive abilities, the problem persists of what to do with people who have difficulties in learning appropriate customer-oriented skills.

Third, in general self-esteem and self-efficacy become much more important because they help motivation, even with complex tasks. Fourth, intellectual work becomes more dominant. At the moment, most of our job analysis or appraisal methods are geared towards non-intellectual work. This makes it important to concentrate more on intellectual regulation of work (Frese and Zapf, 1994).

Global competition

There is no doubt that there is now more global competition than in the past, and it is highly likely that this trend will increase. In the 1960s, 7 per cent of the US economy was exposed to international competition; in the 1980s, this

climbed to above 70 per cent (Gwynne, 1992). Global competition will reign not only on the company level but also more and more on the individual level. With better communication devices, software developers in India compete for work with software developers in the Netherlands or Switzerland. The strongest competitors with German construction workers are British, Portuguese and Polish workers who work as small-scale entrepreneurs in Germany, selling their labour power. In order for more highly developed countries to be able to hold their own in this competition, their highly paid workers have to improve their skills, be more active, show more initiative, be more reliable and be more up-to-date than their competitors (who will usually earn less).

There are important implications for work and organizational psychology.

- Since people's ideas and attitudes become more important for increasing productivity, the development of work and organizational psychology itself becomes a factor that will determine whether or not a society will be able to compete globally.
- Companies have to become more imaginative in stimulating self-reliance and initiative (Frese, 1997). Without active cooperation and individual self-starting and long-term involvement in the company, the company will not be able to compete well.
- A high degree of employee initiative is particularly important when companies have to deal with turbulence and changes. Since globalization increases the amount of turbulence in companies' environment, companies have to learn to react flexibly to it.
- International cooperation will become more important. The most obvious issue for work and organizational psychology is that there will be a higher need for cross-cultural management. Managers will need to have skills in negotiating, leading, organizing and planning across cultures. There will be more international project work (particularly across European countries) and there will be more internationally assigned managers who have to deal with living in cultures other than their own. The expertise of work and organizational psychology will be needed in all these areas.
- It is much more difficult for smaller companies to make use of globalization. Partly, this is a function of the thought patterns of small-scale entrepreneurs, who may not even think about international activity. Work and organizational psychologists might help to overcome thought barriers here.
- Globalization leads to a reduction of the power of the labour unions. While labour unions may have contributed to a certain degree of inflexibility, they have also helped to increase the degree of procedural and distributive justice in companies. Thus, other groups will have to take care of justice issues in the organizations. The stability of employer–employee relations may be negatively affected by the lack of a clear and historically powerful representation of employees.

Development of larger and smaller units

There is a curious polarization appearing in the world of organizations. On the one hand, organizations are becoming bigger and bigger, forever increasing in size through mergers and acquisitions. This is done despite the fact that most mergers and acquisitions do not lead to the expected positive effects and often have even negative ones (Hogan and Overmyer-Day, 1994). On the other hand, large units are consistently decreasing in size (Kozlowski et al., 1993) and more and more small start-up firms are appearing. Moreover, there is evidence that smaller units employing from 10 to 150 people are more flexible, work better with each other and show a higher degree of innovative potential (Simon, 1996; Nicholson, 1998). Organizations develop networks with each other instead of employing more and more people in their ranks. Of course, some companies attempt to be big and at the same time attempt to mimic the 'small is beautiful' strategy of small-scale enterprises, e.g. the Swiss-Swedish firm of Avery Brown Bovery (ABB), which governs its total company with sales of US$28 billion produced by 220,000 employees worldwide with only 140 people in its headquarters (International Herald Tribune, 1992).

More research on the issue of the size of companies would be interesting. It is most likely that a contingency theory will be needed. For example, companies that rely on innovation, cohesion of the employees and a good working climate may be better being small. In contrast, companies that thrive particularly on economies of scale in supplies and supporting demands will tend to do better when they are large.

Another important issue is the development of small-scale entrepreneurs. Large companies often leave important niches open, and it is small-scale entrepreneurs who can occupy them. Organizational psychologists have been too much oriented towards big business. More emphasis should be placed on the psychology of small-scale entrepreneurs and the organizational issues of small-scale businesses (Frese, 1998).

Changing job and career concepts

Some authors have argued that the notion of jobs as we know them will evaporate (Bridges, 1995; Rifkin, 1995). First, there is a clear reduction of jobs in the traditional production and service industries. With every re-engineering attempt, the number of blue and white collar workers is reduced tremendously. Louisville Capital Holding reduced its back office staff from 1900 to 1100, while increasing business by 25 per cent after re-engineering (Bridges, 1995). Second, technological innovation leads to a reduction of personnel. For example, cashier jobs (the third largest clerical group in the USA) will be cut by 10–15 per cent by new scanning equipment (Rifkin, 1995); in Britain, there are already some supermarkets where people scan their own shopping. This trend will probably be increased by electronic shopping. Third, temporary and

project work is increasing. A symbol of this is that temporary employment agencies have had the highest increase in sales and number of employees (Bridges, 1995). More and more companies are outsourcing, employing people only on a project basis, or they are even reducing the company to a virtual company, consisting of a network of small-scale entrepreneurs. Fourth, modern companies are changing the job concept. For example, Phillips introduced the idea of an umbrella contract. People are now frequently assigned to projects and not to jobs. For example, Microsoft has no regular working hours, and people are accountable to their project team, which is itself accountable to the larger project. When a project ends, employees move on to another project (Bridges, 1995). 'The dejobbed system lacks the normal kind of "edges" that tell workers when they have done a normal, satisfactory job. Since they are expected to do *anything necessary* to accomplish the expected results, they are no longer protected by the boundaries of a job' (Bridges, 1995, p. 42).

All this makes the concept of employability attractive (van Dam, 1998). Every employee has to be interested in developing his or her skills. Employees will be less dependent upon one company. Projects will be selected by different characteristics. For example, people will attempt to participate in projects that allow them to develop their skills and that make it possible to work with new technology or new procedures. Continuous development of professionalism will become more important.

From a work and organizational psychology perspective, this has positive consequences. Traditional jobs have been designed with a Tayloristic perspective. Tayloristic jobs have tended to take away authority from workers; it was given to the supervisor, the bureaucracy, the assembly line etc. In contrast, these newer jobs for professionals will make it necessary for them to develop their skills to a higher degree and will decrease the division of labour typical of Taylorism.

On the other hand, there will be periods of unemployment much more regularly than in traditional jobs, in which people stayed with one company and continued to work in one job, or made their careers within one company. Moreover, loss of jobs in large companies and the emphasis on project work and networks make it necessary to develop a more entrepreneurial spirit. This is particularly important in Europe, which has fewer entrepreneurs than other areas of the world (such as North America or developing countries).

Obviously, employees cannot keep up a high degree of commitment to and identification with one company if they know that they will work in different projects in different companies in a few years. Thus, commitment will be largely with the content of the project and the project group. It is likely that commitment to the professional group will also grow (e.g. being a civil engineer or a psychologist), because the (continuous) development of professionalism is important. Employability implies a certain degree of professionalism.

Since people compete both inside the company and in the external market for new projects and contracts, they have to behave much more entrepre-neurially (even if they are employed). They have to decide which strategies to use, which markets they want to target (e.g. which market niches within the company), how they want to market themselves etc. For example, it will be much more important to ask the question of whether a student of work and organizational psychology has chosen a research programme that has obvious practical and scientific relevance in the future. Obviously, these are difficult tasks that need to be tackled as part of professional life and increase the requirements on cognitive and social skills.

Individuals will have to think of market issues even when they have a stable employer. They will have to make strategic decisions, e.g. whether or not they want to participate in a certain project or whether they want to orient themselves towards a certain market segment (a certain area of expertise). They also have to market themselves within their profession, within their company and across relevant segments across companies (and even across countries to a certain extent). Individuals will have to network to a larger extent than is typical today. Complex decisions have to be made that are risky. Thus, good feedback has to be proactively sought and flexible adjustments of one's orientations and skills will be much more necessary. These are all topics that need to be supported by more knowledge from work and organizational psychology.

Since these decisions need to be made by individuals themselves and cannot be delegated to the company any longer, the individual has to show more personal initiative (Frese, 1997, 1998); this includes decisions to participate in some form of training. Much training will be in the form of self-training, because the company will not be responsible in the same way for continuing education.

One additional problem is that one needs to get good career advice not only at the start of one's career but throughout one's lifetime. Career changes may occur more frequently than today. The integration of one's career with one's private life may be enhanced under those circumstances. The traditional division between work and leisure may become less strong than it is today. Given that project work is more dominant, that there are more transitional periods between projects and that people work more from home, there may be a development to combine work and leisure to a higher degree again (the division between work and leisure did not exist in farming a few hundred years ago).

More team work

Womack et al. (1990) showed that in Japan 69 per cent of all car workers were working in groups, while the figures were 17 per cent in the USA and less than 1 per cent in Europe, and the introduction of group work has since been seen as important for improving productivity. Group work that is being introduced, particularly in Europe (Germany and Holland), is often related to tradition and to experiences with semi-autonomous groups (Antoni, 1994).

Group work will be more common in the future. First, if production responsibilities are given back to the shopfloor (as is found in all new production concepts), single individuals will not be able to make decisions by themselves. Since there are dependencies among shopfloor workers, team decisions have to made. This implies that group participants should know something about each other's work (therefore, there is a need for job rotation). Second, new production methods (like lean production) are geared towards reducing coordination costs by reducing the number of supervisors. Coordination is then carried out within production units (teams). Third, increasing complexity will increase the need for coordinated efforts. Since highly complex decisions require input from different disciplines, there will be a greater need for interdisciplinary team work. Interdisciplinary work is difficult because people have to be able to talk about their own discipline in ways that other people understand, have to learn to understand the basics of another discipline quickly and have to learn to appreciate the different approaches taken by various disciplines (which is as difficult as cross-cultural learning at times; Baron, 1993). Often there will be only one person from each discipline in the group, so that reliance on this person's expertise is quite high. Finally, teams will have to react to environmental turbulence, and local shopfloor teams are better regulators of such turbulence (see the sociotechnical system approach of Emery and Trist, 1969).

One implication of a higher degree of team work is the higher need for good social and communication skills. One reason why the concept of emotional intelligence (Goleman, 1995) has proved attractive to so many people may be that it is required in team work. It is interesting that the automobile companies that invested in Eastern Germany have selected even blue collar workers using assessment centres in order to gauge explicitly the social skills of their newly employed blue collar workers, who are working in lean, team-based production systems. Team training and team development measures may become much more important (the teams are often assembled from scratch for each new project). Thus, from the employee's point of view, it is important to integrate into the team quickly. From the employer's point of view, team development is needed to make the team function well within a shorter period of time.

Teams are not necessarily more efficient than individuals working separately. There is ample evidence that, for creative tasks, this is not the case (Diehl and Stroebe, 1987). While certain tasks (e.g. interdisciplinary ones) require teams despite the loss of productivity, these results suggest that the tendency to do team work may be reduced by counter-tendencies to increase individual work again.

Reduced supervision

Lean production (Womack et al., 1990) and other organizational techniques of restructuring have decreased the number of managers. Thus, a higher degree of responsibility for production and service is given to the shopfloor again. Moreover, telework reduces the amount of direct supervision possible. Therefore, supervisors' functions change; they should not intervene directly in day-to-day affairs but should be mentors of the groups they supervise (Emery and Trist, 1969). Reduced supervision also reduces the outside structure of the job and makes shop floor initiative necessary. The theory of leadership substitution (Kerr and Jermier, 1978; de Vries, 1997) can help to explain how one can deal with this situation. Standardization, a high degree of professionalism, intrinsically satisfying tasks and formalization reduce the need for leadership.

Major problems remain. How can companies make sure that ethical behavior is upheld throughout the company when there is very little direct influence? Supervisors have often been the carriers of organizational knowledge – a function that is much more difficult to develop if there is little knowledge of the concrete work done by employees. Errors and negative error consequences may increase if there is little supervision. Impetus for change is sometimes carried forward by supervisors (and organizational changes are made possible because first-line supervisors smooth the transition in various ways). The upkeep of organizational culture, holding up the symbols and values of the organization, and organizational socialization (Morrison, 1993) are other issues. All these functions of supervisors need to be developed within future organizations with a leaner structure.

Increased cultural diversity

Cultural diversity will increase. The European Union itself makes it necessary for different nationalities to work together in teams across the different European countries. In the USA, more than 50 per cent of workers will be members of ethnic minorities (e.g. blacks, Hispanics) and women soon. While there is more and more knowledge about dealing with cultural diversity, intercultural work means that people from cultures that are deeply suspicious of each other, for historical reasons (e.g. the Dutch and Germans or French and English) or cultural reasons (e.g. Muslims and Christians), will have to work together. This goes beyond understanding another culture and implies dealing with prejudices and animosities.

An added factor is language, when, for example, Europeans have to work together. This goes beyond the issue of which language is used in meetings. Some approaches are language dependent; concepts are used in a certain common cultural framework of understanding and their importance is often historically and culturally based. I have been to international meetings in Europe which were supposed to increase understanding of each other's approaches; however, people went away with even more problems in understanding what people from the other language group actually wanted to say, and prejudices were enhanced rather than reduced.

Software Development as an Example of a Cutting-edge Job

Jobs at the cutting edge of modern technology that can be empirically researched are a good indicator of future trends in the workplace. Software design is such a job. A study of the work situation of this profession comes to the conclusion that the following aspects are of primary importance (Brodbeck and Frese, 1994; Frese and Hesse, 1993):

- a high degree of learning by oneself (new techniques and methods etc.);
- a high degree of working in groups;
- a high degree of communication with co-workers;
- a high degree of interdisciplinary work (e.g. with customers who are experts in another area);
- a high degree to which people determine for themselves how they are solving problems.

These empirical observations reinforce the above mentioned trends and again point at the importance of self-reliance.

Conclusion

Most of the above-mentioned trends increase the importance of self-reliance and initiative. Self-reliance implies that one is able to rely on one's knowledge, skills and motivation; it enables people to stay in the race. Personal initiative implies that a self-starting and proactive approach is taken. The paradigmatic work using self-reliance and initiative is self-employment. More and more professions will increase the level of self-employment, largely because networks of self-employed people will work together, larger units will mimic self-employment for their constituents (e.g. in profit centres), internal entrepreneurs (intrapreneurs) will be encouraged within companies and people will have to participate in an internal market for their skills (mimicking the outside market and, thus, becoming similar to a small-scale entrepreneur). Changes in qualification requirements and in training needs are immense. However, anxiety and insecurity will increase correspondingly. As happens frequently in radical change situations, there are losers and winners. For this reason, work and organizational psychology has to find ways of making it possible for potential losers to participate in these change processes and to deal with the requirements. Some work and organizational psychology is already prepared for these issues, but much more research has to be done and practical approaches have to be tried out and evaluated. It is most likely that psychological processes will be generally perceived to be more important than so far. Thus, work and organizational psychology has to take up the challenge of changing workplaces. Obviously, as pointed out in the introductory comments, none of the changes will develop without provoking counter-movements. For example, there will be attempts to reduce the pressures of globalization and to enhance job security. There will be attempts to keep Tayloristic workplaces intact. I do not argue that there is a mechanistic movement towards higher complexity, a need for self-reliance and entrepreneurship. It is possible to hold back the tide, at least for some time. However, effort and energy will have to be expended that would be better used to develop methods of dealing with the changes that are ahead of us in the world of work.

Chapter Summary

This chapter has suggested that the following trends describe the future of jobs and work: the dissolution of the unity of work in space and time; a fast rate of innovation; increased complexity of work; global competition; the development of larger *and* smaller units; changing job and career concepts; more teamwork; reduced supervision; and increased cultural diversity. What each development means for work and organizational psychology has been described, together with the kind of research and practice that we will have to do in the future.

Discussion Points

1 Think of a job that you know well and develop several scenarios for how this job will have changed in 20 and 30 years from now. Produce optimistic and pessimistic scenarios. Produce a scenario in which the organizations are very conservative or in which they make many changes.

2 What issues will become important for managers of a firm in 30 years and for labour union officials? What kind of projects would they want work and organizational psychologists to have researched so that they can help them in making decisions?

3 Think of losers and winners of the development of work. How can psychology help the losers and the winners.