

The New Economy.

**On the challenges and consequences of an economy increasingly dominated by intangible goods /
Ulrich Klotz**

It has taken some time, but the phrase has finally arrived in the Old World: the "new economy". But what is meant by it? Is it just another one of those buzzwords that are always spilling over from America and, like so many others, will soon not sound so new anymore? Or could it be a new theory of economics? Yes and no. Essentially it is an expression of the fact that the role of intangible goods in society and the economy is constantly expanding. As a result, familiar standards for measuring value and economic principles are losing their meaning. This is because an economy whose most important products are easily reproducible pieces of information will be subject to much different rules than one that uses raw materials, capital and labour to produce and trade in material goods. This has immediate consequences for everyday working life, so that beginning with this issue, we will be presenting a loose series of articles on "The New Economy". (noa.)

Since about the mid-1980s it has been apparent that the technology exerting a decisive influence on the socio-economic development of the late 20th century permits the liberation of many activities from restrictions brought by industrialisation. Parallel to this trend, the familiar concept of work as labour performed in a continuous manner at a set time and place - which only arose with the development of industrialisation - is also undergoing a transformation. Work is fragmenting into many forms, and the dividing lines between working time and leisure time, home and the workplace, learning and working, working life and retirement, dependent and independent work, producers and consumers and between companies and industries are becoming increasingly blurred. And wherever such fundamental categories as working time, place of work, performance and working location lose their contours, the foundations of our edifice of agreements, standards, regulations, laws, organisational forms, structures and institutions will inevitably crumble. The influence of these long-standing structures on our patterns of behaviour and systems of values is more powerful than we are aware. This process is gradually eroding the "basis for doing business" of institutions such as unions, whose activities are based on a definition of work formed by industry, and posing new challenges.

If we consider business organisations as mechanisms for coordinating work processes and flows of materials, money and ideas, then we must concede that their form depends primarily on the available coordination technologies. The steam engine, railway, assembly line and related innovations made the centralist-hierarchical organisational model the predominant form in the 20th century; the industrial work in offices and factories, ruled by the requirements of primitive machines, became synonymous with work in general. Now a process is underway that is quite similar to the transition from the agrarian to the industrial society: with information and communications technology (IT), entirely new company models and value creation processes can now develop and flourish. In the long term they will probably engender yet another new definition of work.

The rise of information work.

The quality of the revolutions triggered by communications media can be most easily grasped when we look beyond the technological and economic consequences and consider their cultural impact. The invention of the printing press, for instance, made knowledge accessible to more people than ever before. The telephone enabled people to speak without travelling to meet at one location. In the long term, each of these technologies has transformed nearly all aspects of society: social forms, behaviour patterns, values, work, institutions and much more.

Digital networks work – to some extent – like telephony and printing combined, but presumably with far deeper and more far-reaching effects. While telephones liberate the act of speaking from restrictions of place, computer networks free an inestimable number of human activities from the need to perform them at a specific location. While printing is essentially only an (apparently) harmless technology for more efficient reproduction of written material – it is faster than copying by hand – computer networks permit an increase in the ease of information distribution that vastly exceeds the quantitative leap from copying by hand to printing. Today the information quantity of entire libraries can be distributed around the world within a fraction of a second. And this possibility is not limited to printed material, but also includes:

Information and sensory impressions of almost any kind. While telephones and printing presses only pass on information – what is entered at one end comes out at the other – the computer also permits the information to be converted into new information and sensory impressions. Seen in this way, the computer is the most powerful communications and design medium ever created by humanity, since it is capable of simulating all conventional media, not to mention processes not even possible in the real world.

The term “globalisation”, frequently used in this context, is of little use, however – for world-wide economic processes are no longer new, at least not since the days of Vasco da Gama, Marco Polo and others. What is new is the informatisation of many processes and the use of IT to support them. This is the decisive contribution to the establishment of a global division of labour, which today permits a Korean car manufacturer, for instance, to obtain financing from Japan, design from Italy and the motor and transmission from Germany for the development of a new car. The car is then assembled in England after importing the labour-intensive parts from Korea and using electronic components developed in the USA and manufactured in Taiwan.

Equally far off the mark in this context are discussions on the trend towards a “service-based society”. This concept, too, is of little use, since it leads to false associations and is more of a hindrance than a help in understanding the nature of the structural transformation. In reality, services of the traditional kind have yielded hardly any additional employment over the past 50 years. The classical three-sector model with the agricultural, industrial and services sectors and the set of instruments traditionally applied by economists are not suited to the task of registering in detail and assessing the transformations currently taking place in connection with informatisation. A characteristic feature of informatisation is that the attempt to apply these distinctions to it is increasingly nonsensical. More to the point is the proposal by Marc Porat to give separate consideration to economic activities involving information tasks – i.e. “brain work”.

For despite - or perhaps because of – the rapid growth in the power of information technologies, the proportion of information workers is skyrocketing. Automation of routine tasks is raising the intellectual content of the (remaining) work. Creating added value depends more and more on the ability to understand information, react to it, manage it and use it. Intangible components and values (information, services, relationships and emotions) and the handling of knowledge now account for an ever-expanding share of value creation. Today half the workforce in highly developed countries already depend for their living on activities whose raw materials, tools, tasks and results are mainly comprised of information. If current prognoses are accurate, by the next decade four-fifths of all human labour will consist of consultation, information, research, development, organisation, networking, management, design and presentation. These will all be typical forms of work in the future. In short: more and more people will be doing work that amounts to converting data into meaning or knowledge.

If we categorise societies according to the activities that shape the lives of the majority of their members, then we have already been living for some time in an information society. New social and business forms are not driving out the old ones entirely: just as the industrial society requires a functional agricultural sector, the information society needs a solid industrial base. However, the effects of informatisation on industry are similar to those of industrialisation on agriculture: the volume of work is shrinking dramatically (despite expanding output) and in most cases the quality of the residual activities is undergoing fundamental changes - even the high-tech farmer is coming to resemble an information worker.

The New Economy.

Although business with intangible goods (information and services) has long since surpassed all other economic activity, traditional economics still has no terms to describe the resources on which the value creation process is based, let alone usable models and approaches for explaining this type of (information) economy. The units used as a basis of discussion in classical economics - pieces, weight, time, price etc. - fail almost completely to describe information work and intangible goods.

In the USA the term "New Economy" has been gaining currency since the mid-1990s. Numerous synonyms - "Digital Economy", "Networked Economy", "Internet Economy", "Knowledge Economy" - and successful young magazines like "Business 2.0" strongly suggest that the "new" and "old" economies are not new and old economic sectors, but rather areas to which different economic rules apply. In principle it is a market model based on digital networks in which special properties of digitised goods play a central role. Strictly speaking, many rules are not necessarily new; what is new is the fact that they are spreading to an ever-increasing proportion of economic activity at an unprecedented rate of speed.

Unlike material goods, information can be transferred, sold, given away and exchanged without leaving the hands of their original owner. Bits and ideas can be sold and, at the same time, kept: the original and the copy are indistinguishable. Information products need to be developed only once to be usable by everyone - they can be distributed a million-fold over computer networks with practically no additional effort. Intangible goods have only development costs. The marginal costs for copying and distribution of digital knowledge are practically nil.

Knowledge as value leverage.

In an information economy, value is increased above all through the application of knowledge. A value creation process in which added value is not created by means of greater volumes differs essentially from material production. In material production, production factors - (manual) labour, raw materials and capital - are used up in the process: to produce more, more of them must be used. By contrast, knowledge is a resource that is not used up; instead, it actually increases in quantity through use.

Today the principle form in which knowledge flows into products of all kinds is software. Since production processes are becoming more and more software-intensive, physical products, too, are increasingly taking on characteristics of software. Where processes are largely controlled by computers, the costs of varying the product range tend towards zero, a phenomenon that turns the rules of mass production upside down. In the era of mechanisation, increasing production runs led to lower unit costs. In computerised production, on the other hand, a custom-made item costs negligibly more than its mass-produced counterpart. Indeed it is not unusual for customer-specific production to be even cheaper. A case in point is BoD (Books on Demand): publishers use computer-controlled machines to produce single copies of books as orders arrive, and no longer need to produce large print runs to build up inventories. The first shops have appeared on the scene where computer-controlled machines produce cosmetics to customer specifications, make custom-tailored clothes or assemble furniture. Instead of transporting finished goods, often over great distances, companies can manufacture products in decentralised "technofactories" located where the products are needed. The "factory" will not produce finished objects; its "output" will be manufacturing programs that are electronically distributed.

"On demand" and "mass customising" production methods are sparking a renaissance in the structure of tradesmen's activities and regional networks and at the same time are redefining the relationship between customers and workers. Similar to the role played today by homeowners in residential construction, the customer of the future will be closely involved, sharing in product design as a "prosumer" (producer/consumer) for clothing, vehicles, home furnishings, entertainment, software and immediate services of all kinds.

This trend is intensified by the fact that computer networks are making possible an unprecedented degree of market transparency. Consequently, competition on the basis of price alone is bound to be ruinous in the

long term. It will be practically impossible to boost value creation by increasing quantity; the only way will be through differentiation.

In short: mechanisation led to mass production; informatisation will put an end to it in many (but not all) sectors of the economy.

The "manufacture" of intangible values cannot be driven like the production of material products - here excellence cannot be replaced by quantity. While it is reasonable to assume that three hundred automobile workers will produce about three times as many cars as one hundred (or the same number in one-third the time), this kind of argument cannot be transferred to many types of information production. For instance, in the area of software development small teams of two or three gifted developers usually achieve better results within a shorter time than an incomparably larger group of average programmers. All major milestones in the history of software have been the work of individuals or very small teams. This fact is also expressed in an accepted "law" of software development: "Assigning new staff to a project that is behind schedule results in even greater delays."

It is quite reasonable to compare the development of complex information products with the creation of other products of mental activity - writing a novel, for instance. In such an endeavour the "broth" does not improve, as a rule, as the number of "cooks" increases - on the contrary. Wherever "brain running time" and inspiration replace the running time of machines as decisive factors, concepts of productivity based on quantitative parameters will break down (as will any approach to redistributing work based on such concepts). With information products, what counts is the quality of the ideas that go into them and not the amount of working time invested - just as a novel is not judged by the number of pages or writing hours. Productivity, then, is not the result of faster machines, but of better qualifications, communication and motivation.

Material things are subject to immutable laws of conservation: it is impossible to consume more than is produced. Information is different: we all absorb more information than we pass on. So far, no limits to growth in production of intangible goods have appeared. The more people that process information and the more powerful the IT systems become, the greater the quantity of raw materials and tasks that are created for other knowledge workers - work creates above all more work. Thus increasing productivity does not lead to shorter working time for many knowledge workers. On the contrary - it results in blurred boundaries between work and leisure time. Regardless of whether they are at work or not, people are getting busier - mainly with information.

Time competition.

The increasing time pressure plaguing more and more information workers comes about because the price obtained on the market for a piece of information (or a knowledge product) does not depend on the working time invested, but rather on the exclusivity that the product has for a short time period - until there are enough copies or competing products. If everyone knew the conditions driving a share price upwards, then this information would be worthless. Whether this type of information is accessible to everyone is a matter of indifference. What is crucial is to be among the first to possess it and then to act accordingly. Most information does not usually remain secret, but perhaps it can remain secret long enough to yield benefits to its original owner. Since computers are making it possible to replicate, modify and distribute information with ever-increasing speed, this profitable time window is constantly shrinking.

In the new economy, company size is losing its importance, since thresholds to markets are very low. Individuals can supply global markets with intangible products via networks just as well as large companies, since there is no need either for company-owned production facilities or sales structures. The fairy-tale

success stories of the new e-companies - such as Xoom, eBay, Yahoo, Amazon, Go2Net - are highly instructive. These companies, some of them just a few months old, already have world-wide sales of tens or hundreds of millions of dollars and growth rates of several hundred percent.

To the extent that classical competition factors and physical distance diminish in importance, competition will be reduced to time competition. Size or costs will no longer count; instead, creativity and flexibility will be crucial. If it was once the large firms that ate up the small fry, the future will see fast companies overtaking their slower rivals. The key indicator of performance will be time-to-market. Sometimes just a few weeks can make the difference between a resounding success and a dismal failure. Consequently, it is not unusual for the creators of digital products to endure phases with 100-hour working weeks. Since software now plays a key role in all segments of the value added chain, even in "old" industries such as car manufacturing - or, in the words of ABB head Percy Barnevik, "all companies today are IT companies" - it is becoming more common here, too, for development work to go on around the clock and around the globe.

Network effects and the economy of attention

The balance of power between employees and companies is shifting / Stronger orientation towards employee interests / The New Economy (2) / Ulrich Klotz

The "new economy" is turning familiar certainties upside-down. Market capitalisation of Internet companies now overshadow those of important automobile concerns and, most significantly, the importance of production factors is changing. Labour, designated as "human capital" when associated with knowledge, is becoming a scarce commodity. But value added chains and conventional networks, too, are dissolving because new rules now apply to the game. The author has dubbed them the "Economy of attention". (noa.)

The value of information products and network components is measured by other standards than that of conventional material goods for which there is a direct link between scarcity and value, for instance. Gold is more valuable than wheat, although it is not edible. The exact opposite applies to software and certain other information tools (albeit not in all cases): their value increases as they become more widespread. A fax machine is worthless if it is the only one in the world. But every additional installed fax machine increases the value of our own machine (and that of all others). The faster a computer program is distributed, the sooner it will become the (de facto) standard and provide the basis for follow-up business.

Networking effects that increase the value of a product with each additional installed unit can quickly bring about lucrative monopolies, as demonstrated by Microsoft and Intel. For this reason more and more IT companies are adopting strategies of giving away their products. These free products are a quick way of achieving a critical mass of customers. Once a standard has been thus established, it becomes extremely difficult for the competition to gain access to the market. Marketing complementary services is then all the more profitable. Prime examples are companies like Netscape and RealNetworks, who used free products to build market shares of 80 percent and astronomical stock market valuations. Mobile telephones and PCs are also being given away by the hundreds of thousands in the USA. This is often simply a new version of the old AT&T model: free telephone connections make it possible for customers to use a new communication service. What is new is the speed: there have been instances when world markets and monopoly positions have been conquered via Internet within a few weeks.

Free net-based services of all kinds have since appeared on the scene, along with the first Internet providers who actually pay customers for time spent online instead of charging them for it. This type of advertising-driven business model – comparable to free television – makes plain what it is that is actually becoming scarce and expensive in the information economy. The characteristic feature of the information society is not that information is taking on a special value: it is the flood of information that people can no longer cope with. The real bottleneck is the capacity for taking in and processing the wealth of signals, symbols and stimuli. Since information that receives no attention has no economic value, its value is not intrinsic, but depends on the resource that it taps: information uses the attention of its recipient. If IT makes it increasingly possible to provide more information than we can hope to take in, then the scarcest of all factors

in the information society will be attention, for attention - like time - cannot be increased in quantity. The greater the flood of information, the more the factor of attention will be valued and rewarded. TV ratings, circulation figures, numbers of site visitors, accesses or citations are measures of "attention revenues" that can indeed be converted into ready cash. Soaring advertising budgets and fees paid to stars, and exploding values of brand names or popular Internet pages are just a few indications that the new theory of the "economy of attention" indeed has a basis in reality. Here are two examples: the American basketball star Michael Jordan is paid approximately \$20m for advertising sports shoes per year for Nike, an American company - about twice as much as the twelve thousand Asian seamstresses who make these shoes. And the cable TV company AT-Home paid \$6.7bn for the Internet search engine Excite. By way of comparison: the American automotive group Ford paid \$6.45bn for Volvo.

Alongside these developments, the universally evident trend that places ever-increasing value on popularity, celebrity and brand names is intensifying the so-called "information paradox": the fact that to estimate the value of information, one has to know it – but then one no longer needs to acquire it. As a result, the information economy attaches importance to different value factors or evaluation substitutes such as trust, reputation, renown, relationships or loyalty.

New value standards

According to traditional economic theory, the value of real goods is based above all on unit costs. Companies have traditionally been valued according to their balance sheets and their holdings of cash and inventory. Financial transactions, on the other hand, are valued on the basis of the anticipated potential for future earnings.

In reality, however, markets for what economists call "real goods and services" have begun acting more and more like financial markets. Especially in the new economy, the market capitalisation of companies is now routinely an enormous multiple of their book values - a trend that continues to gain momentum. Thus stock markets, as a sensitive indicator for trends and competition factors, provide additional proof of the rapidly expanding significance of knowledge in value creation.

Almost symbolic of the transition to the information society is the rise of Microsoft to become the world's most valuable company. The market capitalisation (> \$450 bn in 1999) of this relatively young company now exceeds the combined worth of the twelve automotive groups with the largest world-wide sales (!). An old industrial giant like General Motors, for instance, with a vast empire of expensive facilities, revenues ten times those of Microsoft and almost thirty times as many employees, has only one-tenth the market value of Microsoft.

If Microsoft employees were to stay away from work starting tomorrow, the result would be the biggest stock market crash in history, for the company's book value is negligible: a few office buildings and computers. This scenario shows that the employees, the so-called human capital, are the only important capital in the new economy. Raw materials, machines, energy, property and tangible assets - the entire range of traditional production and competition factors are losing all importance - and with them the economic theories based on them.

One feature that sets human capital apart from material capital is the fact that it cannot be owned. Consequently, the balance of power between employees and companies and the relative positions of labour and capital are changing in the information economy. It is no longer the capitalists, but rather the employees who own the decisive means of production: the knowledge in their own heads. For this reason, successful companies in the new economy typically make efforts to act in the interests of their employees and develop

an enlightened corporate structure. "The First Tennessee Bank publicly declares: 'employees come first, followed by customers, then shareholders'..." The international consulting company Ernst & Young has observed a trend for some time among institutional investors to invest in companies known for their appeal on the employment markets.

Employees and stock market valuation.

"In other words: in the long term, business success is seen as most likely in companies where employees are treated in a way that enables them to optimally develop their skills. While the strategies practised in the old economy to optimise shareholder value were often rightly criticised as short-sighted profit maximisation, new strategies are obviously coming to the fore in the new economy that in some respects are similar to the humanisation demands raised for decades, not least of all by unions. One sees: anyone who treats knowledge workers like share packages will go under.

One very high-profile manifestation of these new attitudes, and of the rise of a new economy, is reflected in the annual "Global 1000" table (a list of the thousand leading companies in the world in terms of market capitalisation). During the past decade the table has gone through unprecedented upheavals. Just ten years after 1989, when seven of the top ten places were held by Japanese companies, not one remained. Business Week's laconic comment: "What has happened in the meantime: the Internet." And indeed, among the 50 most valuable companies in the world are 19 firms that profit directly or indirectly from the Internet. Newcomers such as the network company Cisco (\$676 bn) needed only a few years before overtaking established industrial groups like DaimlerChrysler (\$149 bn), still Germany's biggest company in terms of sales. Even the Internet company Yahoo, the operator of the most-frequented web portal, has since surpassed the largest German industrial corporation with a market capitalisation of DM 179 bn.

Anyone who once dismissed this dizzying trend as a temporary Internet euphoria or even as a bubble economy, sure to burst before long, was disabused of this notion no later than the day when AOL bought Time-Warner. This acquisition, the largest take-over in history, was unanimously interpreted by business commentators as a turning point and a milestone in the transition to a new era. For the first time, the old medium was swallowed up by the old one - Time-Warner, in existence since 1922, the world's largest (and highly successful) media group and the young (founded in 1985), nimble and relatively small Internet company AOL. "AOL is not making an acquisition on the basis of future hopes, but rather a company whose market capitalisation reflects real assets and relatively reliable profit generators, that is to say a company evaluated on the basis of the arithmetic of the old economy," pronounced the Frankfurter Allgemeine Zeitung. The Süddeutsche Zeitung commented on the mega-transaction as follows: "If the 19th century and, perhaps until the lunar landing, even the 20th century are seen as periods of production and mobilisation of raw materials, goods and commodities, then we will have to place the 21st century under the heading of digitalisation right from the start." Spiegel magazine, too, conceded: "Since the AOL monster deal there is no doubt: the Internet is revolutionising the economy... a new type of economy is arising with its own rules and unforeseen effects."

Economy of the invisible.

On the basis of market capitalisation tables, newspapers and magazines were soon speculating on previously unimaginable scenarios: Yahoo buying Siemens, Cisco buying VW or Sun taking over Daimler-Chrysler or some other pearl of the old economy. In any case, they could afford it. Business Week and the Financial Times were even bolder in their assessments, predicting that the Internet would change the world even more radically than the printing press and steam engine combined. These daring pronouncements are

all very well, but can be evaluated, if at all, only with hindsight. One thing is already obvious today, however, namely that these upheavals are far more rapid than anything we have seen in the past. And at least since the AOL/Time Warner deal it has been clear that the "economy of intangibles", shaped by digital information, is beginning to dominate all other areas. Investors, at least, are confirming the view expressed years ago by the future researcher Alvin Toffler: "The central event of the 20th century is the overthrow of matter."

New company models lead to a new definition of work.

Networks extending across the entire value creation chain are increasingly eroding traditional hierarchies / New Economy (3) / Ulrich Klotz

"The system of lifelong paid employment is probably just an episode in human history. The package that was wrapped up at the beginning of industrialisation – social security and social integration only on the basis of dependent employment – is now coming unravelled." This quotation from Werner Dostal accurately describes what companies, policymakers and unions are now facing with the changes in economic life described by the phrase 'new economy'. The author's conclusion is that work will continue, but that the stable job will not. (noa.)

The spread of IT is creating an economy that is based more on the production of ideas than its predecessor, which was guided by the goal of producing objects at the lowest possible cost. Consequently, the tasks and structures of organisations are being transformed. The ability to learn is becoming an organisation's most important competitive advantage, i.e. the ability to produce new knowledge - ideas and innovations - from existing knowledge as fast as possible. Innovations, however, required a radically different climate from any that can be provided under the management and company structures introduced around 125 years ago to organise the efficient production of goods.

In the hierarchies typical of the industrial society, innovative ideas constantly encounter obstacles, since an essential means of exercising power in this organisation form is the monopolisation of information. Since new ideas always represent a threat to old ideas and, consequently, to existing power structures, innovations that are good for the company but bad for management are usually suppressed or at least impeded: "Creativity is basically foreign to the organisation. Organisations actually thrive on the tendency to ignore creativity." (Reinhard K. Sprenger). We have all seen it: in bureaucracies there is always a great deal of talk about innovation, but there is often no real desire for change.

The ponderousness of hierarchical organisations is primarily due to the fact that individuals tend to direct more loyalty towards their immediate superiors than to the organisation as a whole. In his book, "The Theory of Yes Men", the American economist Canice Prendergast demonstrated many years ago that "... organisations that promote and remunerate employees on the basis of assessments by their superiors have little chance of survival in a rapidly changing business climate". Hierarchies have a corrupting influence on the human spirit, for they encourage opportunism as a behaviour pattern that favours success and is rewarded very quickly with promotion: "It's better to be wrong with the boss than right against the boss."

The most convincing evidence of the resulting rigidity is the oft-remarked fact that the top levels in hierarchies lose contact with reality sooner or later, because the organisation is eventually deceived by its own self-image – which often leads to its demise. Abundant examples from the IT sector include former IBM chairman Thomas Watson, who estimated in 1943 that there might conceivably be a market for as many as five computers, or Ken Olsen, the head of the now defunct DEC, once the world's second-largest computer maker, who declared as late as 1977 that there was no reason for anyone to have a computer at home.

Similar cases, such as Heinz Nixdorf – who kept deriding PCs as toys until it was too late to save his company – could be listed almost indefinitely. If top management in the highly innovative IT industry displays a tenuous grip on reality, it can be safely assumed that false assessments of this kind occur even more often in the boardrooms of organisations and sectors less open to innovation – such as public authorities, political parties and associations.

Farewell to hierarchies.

One characteristic of the new economy is thus a gradual shift away from the organisational form that still prevails today – the functional hierarchy. This also means the disappearance of one of the great demarcation lines of the industrial age: the sharp distinction between those who make decisions and those who carry them out. The system of orders, obedience and supervision is being replaced in more and more areas by post-industrial forms of cooperation in which knowledge and individual skills can more effectively reach their potential. Instead of adherence to duty, what is measured and assessed is success – a method that is as effective as it is ambiguous, and raises many new questions, since the old regulatory mechanisms now have little effect.

In the new economy, growth depends primarily on efficient flows of information between people. This means that the way people interact has a far greater impact on business success than technology or collective agreements. As a result, the old functionally and hierarchically structured organisations are being replaced by networks of much smaller units with greater autonomy. This kind of organisation has stronger learning capabilities, since communication does not encounter as many barriers – i.e. departmental boundaries and hierarchical levels – that need to be overcome. In place of rigid lines of communications, an open market for information and ideas is taking shape in which all kinds of direct communication – formal and informal – are possible without distractions of rank or territorial fears.

In the IT industry, which is at the forefront with its extreme dynamism, models of future work are already taking shape today. Often there is neither a fixed job description, nor long-term career paths. There are definitely no punch clocks to register how much time employees spend at work. They decide themselves on working times and the amount of work to be done: what counts are the results. Work is done in small teams that carry out their projects with a high degree of autonomy. Once the task is completed, the group dissolves and the members seek out other employees within the company's internal job market with whom they can jointly tackle new projects. Traditional supervisors and status symbols have almost no significance. When people can decide how, where and when they will work, they need no one to monitor them. Employees remunerated on the basis of performance will ensure themselves that they make optimal use of their efforts. They thus become "employee-entrepreneurs", or "dependent independents" - and "in the end, the historical difference between capital and labour with all its advantages and torments is relocated and placed within the employees".

In particular the ever-shorter innovation cycles - like those especially prevalent in the PC sector - lead to a dilemma that practically forces the introduction of new company models and working forms: the market is changing with ever-increasing speed, and products are becoming obsolete more quickly than ever; meanwhile, however, it is taking longer and longer to develop the skills and competencies needed for new, more complex products. Thus, product planning and skills development must be uncoupled. For new projects, companies can no longer keep enough of their own specialists "on supply". But when there is no longer enough time to qualify the existing staff sufficiently, recruiting methods must be adapted. The company needs specialists immediately who are ready to work - regardless of where they are found.

Consequently, the company of tomorrow will often be little else than a small core made up of a few permanent employees who establish links to suppliers and external specialists and use these links to build a network for producing a common product. The term "virtual company", coined at MIT in the 1980s, has become the accepted term for this kind of network-like value creation community. "Virtual" means that all essential features of an object are present except the object itself. What appears to outsiders to be a corporation is in truth a fabric of relationships woven between highly diverse suppliers that is constantly forming and dissolving in response to current tasks and market needs.

The importance of networks.

A growing number of companies that achieve multimillion dollar profits with just a handful of permanent staff serve to illustrate where the trend is going: from R&D to production and sales to after-sales service, all responsibilities are passed on to a network linking every possible type of supplier. Only strategically significant and lucrative core functions such as controlling the network, managing the brand name and possibly the product design remain in the company – everything else is "outsourced".

"Via the Internet a company can sell goods that it does not make in shops that it does not own, transported by trucks whose drivers work for another company. The transaction costs are so low in an Internet-dominated economy that the barriers for justifying the existence of companies are dropping." (Joseph B. White). Tom Malone of MIT coined the term "e-lance economy" for the organisation form of the future. This refers to networks of electronically connected freelancers as the backbone of a new way of working and doing business. The power of such groupings is illustrated by the rise of the PC operating system Linux that was created as the joint effort of freelance programmers all over the world and now poses a serious threat to the Microsoft monopoly. A hierarchically organised corporation like IBM would never have been capable of this achievement.

Apparently running counter to this trend, the current wave of mergers seems to suggest that companies are increasing in size. But beneath the surface of these often spectacular processes, a countertrend is in evidence – from the point of view of the labour force: 25 years ago, one-fifth all working Americans were employed by one of the Fortune 500 companies, i.e. the group of the 500 largest companies in the United States. Today this quota is well below one-tenth. Since 1980, these companies have shed 5 million jobs. During the same period, 34 million new jobs have been created by small American companies. However, the term "job" in the conventional sense does not apply to many of these positions - just one-third of the workforce in Silicon Valley and the surrounding area have fixed jobs, for instance. Here, too, the e-lance economy is highly developed. The largest private employer by far in the USA today is the temping agency Manpower. This is a further indication of the enormous efforts of companies to replace fixed costs by variable costs to position themselves to react more flexibly to the breakneck pace of market changes.

New definition of work

Industrial production requires the transport of the human production factor to the location where goods are produced. Computer networks, by contrast, bring the production factor - information - to human beings. For many forms of information work, there is no longer any need for workers to be cooped up in "barracks": work again becomes what we do and not where we go. The inflexible regimen of time and place – a fundamental pillar of industrial working culture – thus becomes dispensable. Like every transition, this development has its pros and cons: Gil Gordon, one of the pioneers of telework, puts it succinctly: "The good news is you can work anywhere, anytime. The bad news is you can work anywhere, anytime."

The concept of the office that arose with the development of industrialisation - from the time when people had to travel to their files in order to work - is becoming more and more anachronistic in many cases. "No one will attempt to claim seriously that the eight-hour day at the office is a particularly good stimulus for creativity and innovative ideas." Peter Cochrane, the head of research at British Telecom, sums it up neatly: "I only go to the office to be interrupted." In other words: what is still important is to have meeting places and opportunities for unplanned discussions and informal communication, without which many a company and organisation would long since have gone out of business. Companies that have recognised the nearly inestimable value of informal communication have also begun to take this insight into account when designing premises for information workers, conceiving them as communicative rooms that foster creativity and no longer as administrative buildings in the form of tracts of isolating office cells or nerve-deadening halls of desks.

"Atypical forms of work"

As the new company models proliferate, forms of work are spreading that we still refer to as "atypical": part-time work, temporary work, limited contracts, telework, contract work and other forms of (pseudo) entrepreneurial work. The proportion of so-called "normal employment relationships" has already fallen to two-thirds of the workforce. Experts estimate that the two groups - those still working full-time under "normal" conditions, and those for whom the working situation that was once the rule is now the exception - will soon be equal in number.

Although industrial production continues to rise in absolute terms, its relative importance is declining. Like agricultural work in the past, industry-related activities will shrink in the long term to a residual quantity. The major leap in productivity is yet to come in most industrial sectors, since the true potential of IT has so far gone unrecognised in many areas. The situation is reminiscent of the arrival of electricity. Initially it was used only to replace steam engines through electric motors in factories, so that the productivity gains were negligible. Not until the 1920s was the full potential of this new technology understood. The insight led to the establishment of completely redesigned factories in which production grew at explosive rates. For the computer the situation is similar. For a long time it was seen as a machine for performing existing tasks more quickly. Over a period of many years, especially during the era characterised by centralised data processing, the "productivity paradox" was a frequent complaint: soaring IT costs actually led to falling productivity, especially in offices. Only now are more and more managers beginning to see that with the help of IT, operational processes can be completely restructured, as long as the computer is no longer treated as a programmable machine, but rather as a medium for helping people to work together.

Most tasks that are so routine that they can be measured will sooner or later be passed on to technical systems. Hence value creation in the future will take place more in the form of handling exceptional situations, and less in standard procedures. What remains are tasks that are for the most part beyond the reach of traditional forms of "regulation - the paradigm of the industrially defined working society." Consequently, incomes in the information economy are no longer proportional to the working time invested. Instead they depend on the skill, originality and speed with which new problems are identified, creatively handled and the solutions convincingly communicated. Parallel to this trend, conventional career paths, formal qualifications, standardised vocational profiles and fixed job descriptions are gradually losing significance. In the new era, the concepts that correspond to energy, specialisation and interchangeability in the industrial age are time, learning and adaptability.

Increasing income disparity is a widespread consequence of this development, phenomenon that has attracted notice among concerned politicians. Even President Clinton warned at the end of November 1999 at

a summit meeting in Florence of the "digital divide" - the widening division of society into those who are able to work successfully with the new possibilities of IT, and those who are largely cut off from access to these technologies and are increasingly sliding into the role of menials for the more successful. Peter Cochrane defines a two-class society on the basis of time buyers and time sellers: on the one hand, people who are nearly suffocating in (well-paid) work and spend a great deal of money to save a little time - for instance by using all kinds of service providers. At the other end of the scale there are those who use a great deal of their time to save a little money, for instance through time-consuming price comparisons and long distances travelled just to buy more cheaply.

In the information economy, trade is possible across all boundaries. This applies not only to goods, but also to labour. Work is becoming a commodity that can be redistributed at ever-decreasing time intervals, a fact clearly demonstrated by the many world-wide Internet auctions of labour(ers). Call centre employees in Dublin compete (or cooperate) with their American colleagues, as do programmers in Erlangen with their counterparts in Seattle, Bangalore or Moscow. For activities where the location of workers is no longer important, boundaries, regulations and institutions at the national level are losing influence, especially as linguistic and cultural barriers become more and more porous.

In short: work is still with us, but the stable job is not. Work will be understood in the future more as what people do, and not as something they have. The attitude to work defined by the traditional notion of "a job" will have to be abandoned. It is being replaced by thinking in terms of skills that enable people to earn a living.

Investments in information technology strengthen growth

The US example shows the way / New Economy (4) / Ulrich Klotz

In the future, states will not necessarily be successful unless they face the challenges of the Internet world. The key production factor in an Internet-dominated world is knowledge. The more people who have fast access to information and use it, the more the economy can grow and generate new jobs. The author describes below the fundamentals of an information society that has to some extent become reality in the USA, and where this country has some catching up to do. (noa.)

If we look back at the outline of the new economy presented in the previous articles, it seems reasonable to conclude that a confusing (working) society awaits us in the new century. Many familiar behaviour patterns, habits of mind and values that arose under industrialism will lose their validity. Before this backdrop, some of the efforts to lessen our most serious problem, that of mass unemployment, must be re-examined in a new light.

To see what lies ahead and what ought to be done, it is still always worth looking at the USA. But it is important not to distort this view with overly simple explanations, such as the claim that the low unemployment rate of 4 percent is mainly due to cheap "McJobs", i.e. badly paid jobs in the service sector.

The fact is: in gross terms, the number of jobs in the United States has grown by 60 percent over the past 30 years. In other words, where there were 50 jobs in 1970, there are now 80. In former West Germany, by comparison, 50 jobs crept up to 52 during the same period. The rest of Europe has not performed much better. Two-thirds of the new jobs are well paid, and just one-third are low-wage jobs. The growth motor has been above all the knowledge-intensive information work surrounding the IT sector. This is mainly where the income was generated that yielded the additional demand for low-income services.

Now the Americans are enjoying the longest boom period in their history. The annual growth rate of over 4 percent is the result of highly diverse developments, however. While some regions in the USA report consistent negative trends and dire poverty, other parts of the country (e.g. Seattle, Austin, Denver or the renowned Silicon Valley) are achieving growth of 20 percent and more. These compact growth regions, many of which have a high quality of life enhanced by a favourable climate and pleasant surroundings, are carrying the success of the entire country. It was especially these areas, for instance, that helped double the number of millionaire households in the USA to the present level of 8 million. The predominant working form in these localities has become what is known as SOHO (small office, home office), a development in line with the trend towards more "telecommuters": today there are already 16 million people for whom the idea of location plays hardly any role at all, and who often work freelance at home.

These observations illustrate the consequences of the technology that will dominate during the coming century: within all countries, individual regions will take shape that will successfully operate in a world without

borders. Or, in other words: states will no longer flourish because they have a large land mass or mineral deposits, for the key industries of the future know no boundaries. While the production of material goods will gravitate even more strongly towards the location of markets, the highly lucrative information work (and along with it, the capital) will tend to go where the knowledge is - for instance to Silicon Valley. The money now being pumped by Foreign investors into the already rich United States far exceeds the amounts being invested abroad by Americans. The consequence: a shortage of labour is now a far greater problem in the United States than a lack of employment.

Reasons for success

To European ears, the current plans of the US government sound utopian: it is planning to use the enormous budget surpluses (over \$4 trillion in 10 years) to pay off all the debt accumulated over a 200-year period by 2013. Should this plan prove successful, then it will represent a potential basis for social benefits beyond European politicians' wildest dreams.

What is behind this phenomenal economic success that has given the United States this unchallenged lead, further ahead of all potential rivals than any country ever before? It is first and foremost a result of the enormous head start gained over all other countries on the way to the "new economy". American scientists, entrepreneurs and politicians spotted the enormous importance of these technologies earlier than others, in particular information technology, and made massive investments in structural transformation. Among the success factors that have contributed to the clear domination of American companies in key sectors of the world economy, such as software and computer networks, are active R&D policies and early deregulation in nearly all areas.

The competitiveness of every economy is increasingly dependent on the number of people who have access to information and are able to utilise it. Here the IT infrastructure plays a significant role. And in this area the situation in Germany is not particularly good: the share of GDP accounted for by information technology, the per capital investments in IT and the penetration of PCs (61 per 100 inhabitants) are all twice as high in the United States as in this country, while the proportion of Internet users (30 percent) is actually three times as high. And these gaps are actually widening, for the annual growth rates in the USA are also higher than ours. Also worth mentioning in passing is the fact that the IT industry is achieving double-digit annual growth rates, contributing to overall economic growth.

Particularly revealing is the comparison in the USA between the information economy and all other industries: here a rapidly widening prosperity gap is apparent: while average incomes in the areas of software, IT services, consulting, financial services, telecommunications and media are constantly rising, they are now actually below the 1988 levels in the construction industry, manufacturing/production, transport and classical services.

Although the old economy still provides employment for at least four times as many people, the burgeoning sectors of the new economy already generate about half of all corporate profits. It is highly likely that social inequality will become more pronounced, since the "new economy" is achieving productivity gains of 35 percent annually. Even today, the upper fifth of the American population is taking in approximately half of all income, while the lower fifth receive just 3.6 percent of the cake. Business Week sees a parallel to the transition from the agrarian to the industrial society and, if the gap continues to widen, fears "enormous political tensions world-wide between the losers of the old and the winners of the new economy."

Of vital importance for the American employment market, regarded so enviously by German observers, are not so much the comparatively small number of computer specialists – much more significant is their

effect on the rest of the economy. Experts predict, for instance, that US companies will be achieving \$2 trillion in sales in the business-to-business sector via Internet by 2003, and that about half of all business activity will be handled via Internet within ten years. This low-friction, fast means of carrying out transactions yields considerable economic advantages for the companies involved.

Of prime importance is the "content business", the trade in cultural products, which will soon completely overshadow all other sectors in the new economy. Even today the largest export sector in the US economy is not the aircraft industry, computers, or cars: it is the entertainment sector with films and television programs. Here, too, digital networks and satellite technology have long since taken on a key role. Andy Grove, the founder and head of Intel, the world's largest chip manufacturer, predicts: "In five years there will be no more Internet companies, since every company will have to be an Internet company to survive. Success will no longer depend on the number of factories and warehouses, but on how a company organises its information flows."

In view of these developments it is understandable that the United Nations emphasised technology in its most recent development report and, on the title page, points out the unequal distribution of Internet users in the world as a key problem of the future: North America, which accounts for just 5 percent of the world's population, has 50 percent of all Internet users. South Asia, with 20 percent of the world's inhabitants, is home to just 1 percent of the Internet community. The USA has more computers than the rest of the world put together. For the average Bangladeshi, the purchase of a computer would cost eight years' income, whereas the outlay for an average American is just one month's salary. The extensive statistical material presented by the UN impressively demonstrates that world-wide prosperity and development opportunities will depend to an ever-increasing extent on IT penetration and its effective utilisation.

Unfilled jobs as a brake on growth

Conversely, these facts make it clear that a lack of IT specialists can have disastrous consequences for an entire economy. And this very issue is one of our central problems: in Germany there are currently 80,000 IT job vacancies. The total shortfall across the EU is 500,000. The shortage of IT staff is acting more and more as a brake on development. It sounds paradoxical, but it is really the case: unfilled jobs are a source of unemployment. In the final analysis, the plight of the "Old World" is to a great extent a result of our grievous underestimation of the importance of technology over the past 25 years. Thanks to well-organised special interest groups dedicated to guarding entitlements, Europe spent years investing mainly in the past (e.g. agriculture) instead of the future, with the consequence that not a single independent computer manufacturer is still in business today in the entire European Union. In the late 1960s, Germany still had an excellent competitive position in computer technology. If we had taken the many billions that have since drained away into agriculture, mining and the steel industry and invested these sums in education, research and technology instead, we would presumably be in a much better position with regard to unemployment and prosperity than the United States.

The articles that have so far appeared (25 April, 8 May and 29 May) can be retrieved by fax (DM 2.42 per minute). An overview is available under the fax number +49 (0)180-5 55 49 77.

The New Economy (No. 5)

**In the Old World:
Industrial policy instead of innovation policy.**

In the most recent edition (January 2000) of the German government's annual report on research and development, "On Germany's technological competitiveness", it is difficult to overlook that in many respects we have fallen far behind the international leaders in a number of key technologies. We have also lost ground in our efforts to implement a structural transformation towards the creation of an information society. The report complains of "a lack of dynamism" and urges the implementation in Germany of "far-reaching structural reforms to avoid losing more ground". Not least among the areas affected by these concerns is the entire field of educational, research and technological policy – an area certain to gain continually in importance in an increasingly knowledge-based economy.

In retrospect we must concede that many measures implemented in the past under German and European research and technology policy have failed to achieve the intended results, since they have been based on a questionable concept of competitiveness based primarily on technological considerations and an outdated model of the innovation process.

Innovation is not a technical process, but rather a complex social process governed by economic interests, the balance of power in society and the workplace, cultural norms and values and other so-called "soft" factors. It is not limited to new products and processes, but also comprises new forms of behaviour – in science, business and politics. But instead of giving priority to fostering the ability to innovate, our research and technology policy has so far been explicitly skewed towards technology and has had a fixation on capital-intensive areas and high-profile prestige projects bearing catchy titles with strong symbolic associations. The "fast breeder" and the supercomputer "Supremum" are just two examples of the many megaprojects that have since run aground, taking billions in taxpayers' money with them. The basic problem: "Innovation is a microeconomic process, but the state is interested only in macroeconomics."¹

For decades this approach meant that investments were made in technology instead of people. Instead of software (in the broadest sense of the word), human resources and urgently needed organisational innovations, policy-makers focussed sponsorship on hardware and classical innovations of products and processes. This policy demonstrated again and again the truth of the laments of such observers as Joel Mokyr in ZEIT: "State organisations are inherently conservative. Consequently, most major state-sponsored research projects have failed."²

Under the massive influence of corporate interests, it is not uncommon for state research sponsorship to be degraded to mere (thinly disguised) subsidies, thus frequently contributing to the perfection and stabilisation of existing (industrial) structures. Efforts to save jobs – in particular those made under some variants of what is

¹ Gero von Randow, Politik in der Zwickmühle, in: Die Zeit v. 26. 8. 1999, S. 29

² Interview mit Joel Mokyr, in: Die Zeit v. 26. 8. 1999, S. 30

revealingly termed "industrial policy" – have as a result often led in the long term to the very problem they were intended to avoid: increasing unemployment. For whether new technologies yield a positive or negative employment balance depends primarily on how quickly and thoroughly they succeed in changing the structures of the economy. While the innovative leaders profit from technological change, it is not uncommon for the negative results of rationalisation to outweigh the benefits in the case of the laggards.

"Thus, the menacing shortage of employment in the European welfare states is a home-made problem, caused by investing considerable efforts to resist the historical trend. It is the result of a redistribution of existing wealth instead of an economic policy oriented towards new growth" (Freyermuth).³

Wherever employers and employees interests are represented in a well-organised fashion, the necessary changes are often delayed because young, up-and-coming sectors always lack the required clout to bring them about. But the jobs of the future are being created mainly in newly founded or yet to be founded companies. As an illustrative example, the 25 biggest European companies were already big in 1960; in the USA, by contrast, one-third of the top 25 companies did not even exist at that time.⁴ Among these newcomers are companies such as Intel and Microsoft, that are making a major contribution to economic growth in the US today and have since become some of the world's most influential companies.

The future has no lobby

During phases of structural transformation, when a strong lobby fights for the interests of the present, no such lobby stands up for the future. It is then that unions or citizens' initiatives with a broader notion of innovation can get involved as advocates of future employment, thus broadening their membership basis in the long term. Pointing the way in exemplary fashion is the DGB (German Trade Union Federation) with its "Future of Work – the Company of the Future" initiative, and the advisory offices for innovation set up by IG Metall all of 20 years ago. The latter addressed especially the second major employment sector of the future, a sector that offers the most long-term opportunities for trades and craftsmanship: it is the steadily growing, many-faceted area that owes its existence to the fact that our natural resources are limited. Although it is probably now clear that more intelligent use of scarce resources is likely to be the most important source of (specialised) jobs in the future, there is so far little evidence of a structural change in the direction of sustainable resource management: our environment, too, lacks the lobby it deserves.⁵

The American economist Lester Thurow is the originator of the statement: "In the economy of the future, employees with third world skills will earn third world wages even if they happen to live in the first world."⁶ High-wage countries with few natural resources like Germany will consequently succeed in preserving their standard of wealth only if they – at least in some areas – are more innovative than their competitors: one must

³ Freyermuth, Unruhestand a.a.O.

⁴ Lester C. Thurow, Die Reichtums-Pyramide, Düsseldorf 1999

⁵ IBS/IG Metall (Hrsg.), Rationelle Energieverwendung - Herausforderung und Chance für Arbeitnehmer, Hamburg 1982

⁶ Lester C. Thurow, Die Zukunft des Kapitalismus, Düsseldorf 1996, S. 113

always be doing something that others are not yet able to do, since we cannot win in competition based on price alone.

A country's innovation potential is determined largely by the level of education of its populace. In view of the requirements of the radically changing world of work, Germany's ponderous educational system has many shortcomings. Before this background, we must acknowledge as steps in the right direction the current initiatives and programmes such as the "Initiative D21"⁷, the action programme of the German government: "Innovation and jobs in the information society of the 21st century" or the joint programme for immediate action launched by IG Metall and the Information Technology Association within the "Alliance for Employment" to address the shortage of specialists. The initiative "eEurope – an information society for everyone", presented by the EU Commission at the special European summit meeting in March 2000, also contains many appropriate proposals.

Some countries are much further along, such as Sweden, where a wide range of structural reforms to encourage the spread of information technology now has the country hot on the heels of the USA. Owing to a rapidly increasing number of thriving high-tech start-ups, Sweden's unemployment rate has been halved within just a few years, while the Swedish state, plagued for many years with budget deficits, is now recording surpluses. Examples of the active encouragement of IT investments include special treatment of expenditures for personal computers under tax laws, a major contributing factor to an increase in PC penetration to 58 percent within a short period (second place world-wide).

Similar approaches are being pursued in the meantime in more and more companies such as Delta Airways, Intel, Bertelsmann or Ford, who are now taking meaningful steps, for instance donating PCs with Internet access to each of their 350,000 employees world-wide. The aim of this programme, in the words of a company spokesman, is "to prepare our staff for the requirements of the information society". The companies are definitely not doing this for philanthropic reasons, but rather because, in the long term, it "pays off".

Germany, Inc., would do well to copy this example: it is not necessary to go to the extreme of giving everyone a PC, but what about, for instance, providing free Internet access to all citizens? A move of this kind could also "pay off", since the new jobs it would generate would benefit the state coffers. Improvements to the technical infrastructure would be only half the battle, of course. It is at least as important to upgrade teachers' qualifications. Anyone who dismisses proposals of this kind out of hand should pause to reflect on where the car industry would be today if cars had not been given free use of public roads right from the start?

Of vital importance for the development and maintenance of competitiveness is the rapid dissemination of knowledge. Conversely, all types of impediments to communications processes have the opposite effect. That means that the remaining obstacles, particularly in the area of

⁷ www.initiatives21.de

telecommunications (relatively high costs of Internet use, a near-total lack of competition over the "last mile") are a hindrance not to be taken lightly, blocking the spread of new business models and the creation of new jobs and at the same time favouring their development in countries with more favourable conditions. Similar concerns apply to the planned auctioning off of UMTS licences, which could have detrimental effects in the long term, since they amount to a sort of state levy on communications processes – a short-sighted gouging of technology companies to fill up state coffers that could boomerang against national competitiveness in the long term. And the same applies without question to the latest nonsensical move by the tax authorities to declare personal use of the Internet within the workplace and free PCs to be a benefit in kind subject to income tax. While some countries treat free PCs as training measures deserving of sponsorship, German tax bureaucrats counteract the government's modernisation efforts with proposals that sometimes display a frightening ignorance of the practical world. The remaining hope is that the public outrage over such plans will lead to a lasting change in mentality on the part of civil servants. It would certainly be wiser to design tax concepts to create a business environment that would favour a more far-sighted use of scarce resources than, of all things, to begin taxing a competitive factor like communication.

Transformation of industrialism

In its report on "Employment Opportunities in the Information Society" (1998), the EU emphasised two themes in addition to the key area of qualification whose significance will be decisive for the fate of the economy in Europe and, in particular, Germany: the "Development of corporate culture" and the "Promotion of organisational change".

In recent years, international comparative studies examining the UE, Japan and the USA have repeatedly shown that German companies lag far behind in their ability to innovate, and are often even in last place. This circumstance results mainly from internal factors such as organisational structure, management style and corporate culture. Examples to support these assessments are provided especially by the long list of ideas and inventions that have originated in Germany and subsequently been turned into marketable products in other parts of the world. In short: it is apparent that the very factors credited with the past successes of the German economy, i.e. the perfecting of industrial forms of work and organisation, now threaten to become a handicap in a world where the game is played by new rules.

In addition to wide-ranging cultural factors that are difficult to document or influence, some of which correspond to specifically German traditions, value systems and behaviour patterns, another factor that certainly plays a role is the failure of our measurement systems for planning, documenting and controlling companies to keep up with the transformation of value sources. Although it is becoming clear that the ownership of capital and resources will be less crucial in the competition of the future than the ability to develop superior products and services, the valuation and management of companies is still based more on

tangible assets than on intangible assets consisting of human capital and customer capital, i.e. the skills and abilities of employees and the relationships and loyalty of customers.

The insight that employees play a decisive role in deciding the success or failure of a company is still undisputed; nevertheless, this realisation is still not adequately reflected in corporate life. Conventional accounting and balance sheet methods have not yet abandoned the practice of regarding employees mainly as a cost factor or an expense in the income statement. This is probably to some extent the result of the fact that management consultants tend to operate very conservatively in many cases, because in this country they have close links to auditors, whose balance sheets do not show the "human being" as a success factor, or at least not to an appropriate extent. "In a knowledge-based company," says J. Lewent, a financial director at Merck&Co, "the balance sheet system records absolutely nothing."

In view of the erosion of the meanings of classical management and evaluation systems in the "people-based" businesses of the new economy, a number of consulting companies have begun developing new types of concepts and methods for company valuations that give greater precedence to human resources. Deserving of mention in this context are: the Boston Consulting Group with its "Workonomics" concept, the Swedish Skandia Group with the IC (Intellectual Capital) method and Andersen Consulting with its "Value Dynamics" research project. Provided that they achieve widespread success, these and similar approaches are likely to lead ultimately to a fundamental transformation in corporate management – possibly attaining similar importance to that of F.W. Taylor's "scientific management" concept in its time.

Paul A. Strassmann, however, one of the most experienced American consultants at the interface between information technology and organisation, points out a weakness of many of these approaches in his essay, "What is the worth of an employee?". Strassmann distinguishes between the value of individuals' knowledge and its capitalisation as members of an organisation. As an example he uses his own experience as an executive at Xerox. During the 1970s and 1980s the researchers at Xerox PARC were counted among the world's best and most innovative. Nearly all of today's computer technology, from the basic concept of the personal computer to graphic user interfaces with mouse control to Windows, networks and modern printing systems were invented at the Xerox laboratory. Strassmann comments laconically that despite the essential contributions of these inventors to the creation of a gigantic market worth billions of dollars, their contribution to the knowledge capital – as Xerox employees – was zero or even negative. As is well known, top management at Xerox rejected most of these revolutionary inventions, and they were not picked up until years later when pioneering companies such as Apple Computer successfully implemented them. Strassmann stresses: "... it is not salaries and wages that determine the worth of a worker, but how much economic value-added they create as an organised body in excess of the sum of their compensation. It is not how much you pay your workforce that matters [...], it is how well an organization leverages the latent capabilities of its workforce that yields economic value. Knowledge Capital is a reflection of how well an organization integrates the talents of employees, the needs of customers, the skills of the suppliers and its capacity to adapt to external conditions."

In a similar way Leif Edvinsson of the Skandia Group speaks out in favour of innovative organisational and working forms in which people are offered better opportunities for releasing their intellectual capital, their skills and their knowledge. According to Edvinsson, 30% of the Swedish population are dissatisfied with their working situation, "because our organisations have become fortresses that lock up and restrict the talents of the people" – often an enormous waste of resources that urgently needs to be ended.

The key word "motivation"

Comparative figures for Germany are even more unfavourable. The plight is strongly evident in connection with the much-lamented lack of a "service mentality"⁸ in Germany, a phenomenon linked to the unbroken rule of industrially dominated forms of work, organisation and management. The success of a service company depends less on the quantity and much more on the quality of its services. For the latter, the key word is "motivation". Wherever traditional, authoritarian leadership styles and Taylorist management styles prevail, innovation and service quality usually fail to thrive, as Tom Peters once incisively stated: "Anyone who is constantly left out of important information and decisions loses their motivation. Hierarchies cause a reduction in transparency and cripple interest at all levels. The less transparent an organisation is, the more strongly it tends towards decline, because its lower levels boycott it by entering a state of "internal emigration".⁹

Professor Martin Baethge at SOFI in Göttingen names the central problems: although the possibilities of the new technology cannot be fully exploited under the old working forms, the industrial working model hangs on tenaciously in this country because, "the institutional arrangement of the protagonists of corporatism" (i.e. associations and unions) has been extraordinarily successful and is powerful.¹⁰ In other words: our economic problems are rooted in an obvious learning disability of German society that adheres more strongly to the standards, behaviour patterns and routines of the industrial age than many of its competitors.

This is most evident in many proposals now under discussion in the "old world" for fighting unemployment. Often coming to the fore here are still the economic thought patterns from the world of industrial manufacturing and distribution of material goods. Under the changed conditions of the information economy, however, all attempts to solve today's problems with yesterday's perceptions amount to a game played on a shrinking field. The situation is increasingly coming to resemble a fight for resources on an ice pan drifting in warm water in which the protagonists fail to see the safer ice pans (concepts) drifting past on either side because they still think in outdated categories.

A player in a game that does not notice that technological developments have resulted in rule changes will lose regardless of the strategy followed. Prosperity and social stability require economic success, which in turn depends more than ever on intelligent use of technology. The many existing possibilities for redistributing existing work could indeed help to create additional jobs with which people could earn a living.

⁸ Roman Herzog, Die Dienstleistung – Eine gesellschaftspolitische Aufgabe, in: Klaus Mangold (Hrsg.), Die Zukunft der Dienstleistung, Wiesbaden 1997, S. 33-38

⁹ Tom Peters, zit. n. "Trends", Magazin der KPMG, Frühjahrsausg. 1990

¹⁰ Martin Baethge, Transformation des Industrialismus – Konturen der Dienstleistungsbeschäftigung im 21. Jahrhundert, in: Werner Fricke (Hrsg.): Jahrbuch für Arbeit und Technik 1999/2000, Bonn 1999, S.91-102, Bonn 1999

What we need in the long run, however, is new work and a change in attitudes towards new forms of work. New work does not come about through redistribution, but rather through innovation.

One example showing the degree to which "old" thinking still dominates some areas of politics is the current tax reform in Germany, justly criticised by IW president Horst Siebert as inappropriate for the new economy, since it favours tangible over intangible assets. It will hinder the necessary modernisation, argues Siebert, and will have a detrimental effect in the intensifying world-wide competition for qualified personnel. Once again it is plain that the information economy requires changes in thinking at all levels – whether microeconomic or macroeconomic. No area – not company management, nor the work associations or state policy - will be left unaffected by the upheavals. And one should not be deluded by those who once again are gloating over the latest turbulence on the stock exchange as proof of the impending demise of the new economy. The turmoil merely confirms that elementary economic principles remain valid in the Internet era: even in the information economy, companies cannot live forever on losses, but must sooner or later earn money – although the way they go about it is radically changing in more and more areas.

From Workers' Associations to "Empowerment Agencies".

Trade Unions and the New Economy.

To meet the structural change workers' organisations must change their own structures and modes of operation. New Economy (6)

Slogans that are quick in becoming popular are just as quick in evoking criticism. The term „New Economy“ is no exception. Considering its (inevitable) lack of precision and the manifold associations connected to it by now, the criticism is certainly adequate. But in view of the sometimes superficial discussion and a tendency to dismiss the New Economy in a sweeping and indiscriminate judgement as a “speculation bubble” or a “*Zeitgeist* topic” and to disqualify even the Internet as a “passing hype”, there is considerable danger of failing to recognise the nature of the profound processes of change taking place – which for some institutions of the industrial society could very well prove as fatal.

The inherent danger of confusion becomes exemplary in an argument repeatedly found in the British “Economist” according to which the New Economy is being totally overestimated since the IT sector's contribution to the GNP represents only a small percentage while increases in productivity by IT were so far hardly noticeable.

If, however, information technology is seen as a new medium which with regard to the ease of exchanging information will result in greater and quicker changes than ever before witnessed in the history of civilisation, it becomes obvious that much more is at stake than the mere creation of a new industry (the term “industry” being quite useless in this context anyway). Changes in the way people communicate lead to changes in the way they work and in the longer term to a different society. One only needs to look at similar developments in the past to see that traditional economic concepts will be of little assistance to reach an understanding for such changes. In the case of Gutenberg's innovation for instance, the main effect did not consist in the creation of a printing and paper industry but in the manifold and far reaching consequences initiated by a communication which had become so much easier and which eventually revolutionised society.

Marshall McLuhan whose books are currently experiencing a revival described with great foresight how radically new media may form a society but also why they're initially always misjudged. Already in 1964 he warned in his book “Understanding Media” that the spreading of new media always also entailed the doom of social forms and institutions and the creation of new ones; and that those parts in society who were too late to recognise the new medium's long-term effects would have to pay the price with their own downfall.ⁱ

It seems plausible that in the “evening twilight of the industrial society” the very institutions that came into existence in the course of industrialisation – as did for instance the trade unions – will come under particular threat. The technical innovations of the 19th century helped workers' organisations come to life – the technical innovations of the 20th century could lead to their downfall. Karl Marx repeatedly stressed the importance of technology: “The hand mill will lead to a society with feudal masters, the steam mill to a society with industrial capitalists” – how computers and the Internet will eventually influence our society may presently only be guessed at.

A look back in time may help to categorise the current developments more clearly: while in agrarian society people carried out their work for thousands of years according to the rhythm of nature, industrialisation meant that people working together in organisations had to be in one place at the same time. As a result of the effort to make rational use of steam engines as the central source of energy, the need to assemble a great number of people both in terms of time and space became the very backbone of working discipline in the industrial age.

Because of the industrial system mankind was suddenly forced to fundamentally question all perceptions it had about its working behaviour. What today seems a matter of course rather than a hardship – the division of our day into working and leisure time, a system of fixed working hours and places – was at the time of its introduction considered a tremendous loss in freedom causing the affected weavers to call it a “slave system” and to go on strike. Industrialisation separated the space of life from that of work and established borders such as the ones between the different phases of life: training, work and retirement. Hence, in the course of time, the restrictions and constraints of mechanisation and the corresponding organisational concepts led to a new, i.e. the industrial definition of work, to life styles shaped by industrial conditions and to the creation of new forms of solidarity organisations – among them the trade unions.

As was outlined in previous articles of this series, the new processes in the creation of value and the new forms of enterprises following the wake of informatisation are becoming the new dominant factors; they will, in turn, entail an erosion of the working culture shaped by industry and a dissolution of the rigid borders thus submitting people’s relationship to work to yet another change. And while industrially shaped work is mostly perceived as a burden, in particular so since it was and still is in many cases connected with humiliation and rejection, the new forms of work and organisation tend to offer more space for personal development and identification – work without borders can actually mean fun and be literally so “absorbing” that other areas of life are being neglected. Although tayloristic forms of work are being re-introduced in the service sector with Call Centres and Back Offices, it is on the whole legitimate to detect a profound change in working values. And the long-term trends show quite clearly that this process means a growing challenge for trade unions, one they will have to meet with a reorientation in terms of their role, their conception of themselves, their organisational structure and their mode of operation.¹

Considering that many institutions of the industrial era – among them the trade unions – are currently suffering from a rapid loss in significance, a number of things seem to reconfirm McLuhan’s warnings. One day it may perhaps prove as fateful that the workers’ organisations underestimated the dimension of the most important technological innovation of the late 20th century and completely misjudged it for a long time. One misconception particularly fatal for the trade unions resulted from the fact that experiences made with classic machinery which replaced physical work and rendered humans to mere attachments were simply transferred to the computer. The “electronic brain” was not considered a means for communication but a “thinking machine” which would replace and devalue intellectual work. It was a common perception during the 70s, 80s and even in the 90s that information technology would be followed by massive disqualification – that by the “taylorisation of brain work” and the introduction of the “conveyor belt to the office”, most people would eventually be left with only minor and unqualified jobs.

Yet, the exact opposite is true: computers take on more and more routine activities while what is left becomes increasingly demanding on the intellect; this also explains why in Germany every other worker is already an information worker. This, by the way, was clearly foreseen in 1947 by Norbert Wiener, the father of Cybernetics, who in view of the technical developments detectable at the time pleaded for a reform of the educational system claiming that “people with little knowledge will have nothing to sell in future”.

In his main work “Cybernetics”, Wiener wrote that he felt “an obligation” to make his information available to those who had an active interest in the conditions and the future of the workforce, i.e. the trade unions. But he goes on to say that the trade unions were in the hands of a small circle of individuals who were very competent when it came to negotiating for better pay and working conditions but unprepared to adequately discuss political, technical, sociological and economical issues of a more extensive nature but nonetheless directly affecting the existence of the workforce.

Erich Fromm, another of last century’s great thinkers, similarly expresses his regret in his plead for humanised technology (“The

Revolution of Hope"): "Unfortunately, the course of events in recent years has distracted the industrial trade unions from their originally far-reaching objectives. Today they ensure a certain measure of workers' control over certain issues within a company but their range of activity hardly ever goes beyond the questions of wages, working hours and specific working practices. In addition, more often than not they have transformed into dehumanised bureaucracies and would have to completely reorganise if they were to fulfil their obligation for their members' full participation."

In 1968, however, when Fromm wrote these lines, trade unions were still in a better situation. Since then they not only lost a lot of members in most industrialised countries but more importantly, they have become considerably less attractive for the young and higher qualified workers. It should be remembered that the IG Metall (the German Federation of Metal Workers' Unions) evoked a tremendously positive echo around the world when it organised its milestone conferences "Automation, Risk and Chance" (1965), "Computers and Employees" (1968) and "Task Future: Quality of Life" (1972) and invited hundreds of scientists from many different countries; at the time the union managed to establish itself as a progressive, future oriented force in many respects ahead of its time. Apparently not much of this image is left because today's associations with trade unions often mean quite the opposite. This could be related to the above mentioned misjudgements and the fact that ever since the mid-70s – around the time when microelectronics were introduced - trade unions have firmly stepped on the brakes in the process of technological change. Considering that a growing number of people experience the effects of this change as positive, trade unions manoeuvred themselves into a difficult position making a different course of action imperative.

By now it should be largely uncontentious that in the "global village" (McLuhan) unemployment and the dismantling of social services are not so much a consequence of structural change but rather a consequence of refraining from structural change. All continued attempts of tying the New Economy into the temporal and spatial corset of industrialism will in the long run divest organisations even more of their opportunities for actively participating in the formative process because then the opposite of what was to be avoided will take place. Trade unions in particular will be well advised to grasp the opportunities offered by structural change. Organisations limiting themselves to conjuring up actual or presumed abortive developments by repeatedly predicting the advent of doom will run the risk of eventually being of interest only to those who have nothing to expect from a continued development of the operational processes.

Another thing should also be clear by now: trade unions are not losing members because of the structural change in the labour world but because of their incapacity to adapt to structural change quickly enough given that the total number of employees in Germany did not decrease in recent decades but steadily increase (until 1992).

Trade unions are said to have a great capacity for perseverance; they tend to react to new problems only with considerable delay. This suggests a structural deficit they share with many other institutions of the industrial age since due to their origin, the internal organisation of trade unions corresponds to that of a classic-tayloristic factory of mass production: within the pyramid of power control is administered from top to bottom with the bottom implementing what was decided at the top. This principle could be successfully applied so long as markets and membership structures were stable and manageable. Now, however, the surrounding conditions are undergoing such radical changes that trade unions are increasingly perceived as service providers by their (potential) members. But in order to be successful, a service provider needs a completely different structure; for here, it is not the top people who provide over the most valuable information but those who are on site and in direct contact with the customer. Hence, the leadership is no longer expected to plan, instruct and control but to assist and coordinate.

This structural dilemma – to perform the tasks of a (political) service provider on the basis of the internal structure and culture of the old

factory organisation – widens the gap within the organisation between the competence for factual knowledge on the one hand and for decision making on the other as was shown by Peter Schwarz in his book "Management in Non-profit Organisations": "This, in fact, results in two perfectly contrary, opposed orders. Formal hierarchy adheres to the image of the successive-gradual delegation of the formal decision making competence. Those on the top come to decisions concerning what those underneath present or submit for approval. The ones on the bottom prepare the decision making process on the basis of their factual-technical competence. They provide over the expertise, a vivid knowledge of the problem and they have both the information and experience. Hence, the hierarchy of the power of knowledge reverses the bottom to the top^{III}. In other words: those who provide over the factual competence are not entitled to make decisions while those who are authorised to decide usually lack the skilled/technical competence enabling them to assess the consequences of their decisions.

Many companies of the industrial age came across similar problems when they were confronted with the need to transgress from stable sellers' markets to highly dynamic buyers' markets; in the meantime, however, they have demonstrated how the change from an industrially shaped organisation to a service oriented structure and culture can be achieved.

In turn, the way trade unions have so far reacted to the structural change shows to what extent the internalised recipes for past successes are reflected in the culture of an organisation. Most attempts so far at reforming the organisation caused the opposite of what was hoped for: the existing status quo was perfected and stabilised, not least because in most cases the people already in key positions were also the ones who were appointed to organise their own reform process. In such constellations efforts are mostly concentrated on modernising the organisation without touching upon the power structures – with the effect that real changes are made more difficult rather than simpler. Organisational developments orchestrated to the pattern "big departments swallow small ones" usually end up strengthening those who have decisively contributed to the situation one wanted to change in the first place.

One of the main reasons for the poor appeal of all large organisations is no doubt their bureaucratic mode of operation. In order not to fall victim of one's own organisational structure, the primary task must be to eliminate internal communication barriers typical for bureaucracies; they are an impediment for the ability to learn with regard to organisational structures and lead to repeated attempts to solve problems with yesterday's recipes. The foremost barriers in the flow of information are departmental borders, levels of hierarchy and the so called "paralysing layers"; Tom Peters, the internationally successful management guru, underlined their fatal effects with the distinctness typical for him: "The middle management levels are worse than useless: they destroy values. The middle management in large companies ... do nothing but harm to the German GNP. Many companies may therefore consider themselves lucky for every day a middle manager doesn't show up for work."

In organisations with a typically hierarchical leadership culture in which the value of a task is defined insofar as it benefits the superiors, the people on the top often lose touch with reality because they're victims of what Friedrich Weltz once called "management by Potemkin". This explains why institutional organisations tend to develop a phenomenal capacity for perseverance and a life of their own capable of resisting even a massive erosion of the prerequisites for their existence.

The current and omnipresent necessity to develop an open culture of mutual trust which accepts minorities, deviating opinions and mavericks as a valuable potential of ideas and in which information as the key resource does not equal a vehicle to power but a means for work, requires much more than a mere shifting around of boxes in organisational charts – which sometimes comes closer to the shifting around of deck chairs on the "Titanic".

In view of the many half-hearted and failed reform efforts, there is now a risk that trade unions with the additional pressure of growing demands on cutting costs will strive for a "concentration on the core business", i.e. that they will refer to precisely those classic concepts, fields of work and clientele shaped by the industrial age and losing both in effectiveness and significance under the conditions of the New Economy. For trade unions it is just as true: nothing is more dangerous than to rely on yesterday's successes; what matters are the things one gives up. Much of what resulted in success and strength in the past, proves to be of particular hindrance under the new conditions.

Political influence in favour of social balance is by no means made obsolete in an increasingly fragmented, "liquid" labour world; it is, however, true that the collective bargaining parties are losing the ground beneath their feet because traditional concepts of regulation are no longer applicable. Yet, the information and service society is certainly not just a harbinger of a new golden age as was predicted in 1954 by Jean Fourastié in his book "Great Hope of the 20th Century".

In their re-orientation trade unions will be well advised to learn from past mistakes. Instead of continuing to cure symptoms or to complain about abortive developments, they could for instance return to a stronger involvement in national and private policies for research and technology – both as an accompanying as well as a preventive force. They are the places where the routes of the future society are being designed and planned. The structural conditions and scopes for action in almost all political fields will increasingly depend on technical conditions: most policies - whether with regard to pay, economics, management, education, social services or youth – will be influenced by technology as to their contents, methods, aims and the conditions for their enforcement. To preserve one's capacity for political action, it will be of growing importance to be able to assess at an early stage the potentials and consequences of technical trends in order to avoid possible surprises and to be able to interfere when necessary in a controlling way.

The specific promotion for instance of innovations and regional development co-operations aiming at social and ecological benefits (comparable with the work of the IG Metall's innovation advice bureaux^v) continues to be a promising approach.^v In view of the gradual loss of the traditional statutory agencies – along with the successive dissolution of the classic forms of operation – such an approach may lead to new fields of formative power in which even the formula of the "alliance for work" may be filled with concrete life.

Training and further training as a specific area of trade union activity offers particularly promising perspectives: while on the one hand the need for further training will grow as knowledge will become obsolete more quickly in the course of technical change, companies on the other hand tend to invest less and less in the training of their employees once it goes beyond the company's immediate and specific tasks. The companies' risk of losing their "human capital" before the investment of training pays off grows with the change of the labour world. Trade unions could help to close this widening gap between an increasing social need for further training and a general trend on part of the employers to cut down on their training initiatives. In any event, if work is re-defined and if the category "work place" is being gradually dissolved, it will be more up-to-date to promote "employability" rather than employment in order to help people earn a lasting living.^{vi}

The classic trade union tasks – such as the global enforcement of social minimum standards – will, of course, also gain in significance in the course of the rapid internationalisation of the labour markets. Moreover, some organisations already demonstrate new perspectives for future trade union work. They succeed in recruiting members from the new labour world by offering a broad range of services tailored to specific target groups and by approaching them in new ways.^{vi} The Australian organisation APESMA (Association of Professional Engineers, Scientists and Managers) for instance, was transformed into a professional job advice bureau offering individuals a variety of assistance and insurance services; they range from professional further training in co-operation with university and college institutions to job agency services, from legal, fiscal, investment, insurance and retirement counselling to advice and assistance with the right office equipment,

low-cost access to the Internet or with the conclusion of employment or work contracts. In exchange for an appropriate fee many of the services are also available to non-members and in addition there is the possibility for probationary membership to facilitate the decision for a possible membership. Similarly, the AFL-CIO offers its members a large number of life assistance services: the program "workingfamilies.com" includes a service range from "elder care" to health training, assistance with finding home help, inexpensive computers and online services and even an agency for temporary work (together@work) offering its members better than average pay and continuous further training as well as assistance both in terms of job searches as well as career development. But even some of the older approaches are now experiencing a revival with trade unions tying the financial power of their members into enterprises such as "Union Banking", "Union Shopping" and "Union Energy" thus creating new forms of buying communities.

Newly found organisations such as "Working Today" in the United States who serve the needs of "free agents", "temporary workers" and "home office workers" are quickly gaining in significance as already more than one third of all employees in the US fall into these categories. Moreover, the subsiding of the new-market stock exchange euphoria unveiled the dark sides of working without social security and enabled initiatives for the creation of new social nets for the "digital proletariat" to make significant gains in new membership. But even amongst the Silicon Valley's highly mobile trend-setters where average employment lasts for just barely two years and where job turnover is somewhere between 30 and 50 percent depending on the industry, a new thoughtfulness is taking hold. In places with a seriously disturbed "balance between work and life" and where "burn-outs" are becoming more and more frequent, even management is starting to think about new structural conditions and a new time policy in order to limit all kinds of extremes and to serve the interests of both sides.

These and numerous similar examples show that it is too early to speculate about a near end of the trade union movement. For the time being, however, it remains to be seen whether the organisations of the industrial age with their wealth in traditions will develop the ability to change in order to present new concepts and meet the challenges of the new labour world or whether this still vastly accessible terrain will instead be conquered by new organisations who might carry less baggage but who at the same time are less powerful.

In any event, new forms of community oriented activities and new sources for identification will develop along with the dissolution of the classic company and the shifting of social issues away from the workplace to the remaining spheres of life. People whose work has taken on new forms will develop a new demand for agents and counsels because in the information society the need for social security, communication and a social "homeland" will not become less but merely different. In a splintered and disunited society, the role of institutions capable of providing a sense of community, of creating identity and of striving for social balance will be even more significant. Here, the trade unions can play an eminent role provided they succeed in offering the highly fragmented future labour world fewer collective regulations effective on a broad scale and more flexible services with a greater emphasis on the individual needs of the individual member.

In addition, trade unions may strengthen their role as platforms for dialogue by offering a forum not only to employees but to all workers including those who are unemployed. Models for such platforms already exist in the form of electronic networks where people from all over the world discuss the most distinct topics, build their own opinions, exchange experiences, give advice and develop common ideas. New models of enterprise and new forms of work open up new and in part much better conditions for the assertion of rights and the enforcement of social demands with regard to work and pay. For one thing is for certain: the New Economy will not make away with the need for political orientation and organisation. On the contrary, we have every reason to believe that the structural change will bring about a dramatic increase in the inequalities in the world and that it will widen the gap between the poor and the rich. People will continue to need assistance and organisation – but in tomorrow's world their provision will have to be different than in the past.

"In many respects we play our roles according to the script of the industrial society and we do so in spite of the fact that in the conditions we live and act in we are no longer in a position to perform these roles and yet we play to ourselves and others knowing all along that everything is basically totally different from what it appears to be."

Ulrich Beck ("Die Risikogesellschaft")

Recommended Literature.

In the vast amount of books published in recent years on the topics: "The Future of Economics, Work and Society in the Age of the Internet" the following titles deserve special note.

Kevin Kelly: NetEconomy. Ten Radical Strategies for the Economy of the Future. (The boss of the cult magazine WIRED is considered one of the sharpest and most creative observers of the New Economy).

Stan Davis, Christopher Meyer: Das Prinzip Unschärfe. (Management in real time, new rules, new markets, new opportunities in a network world). Gabler 1998. (An insight into the economy of the future by experienced consultants, full of interesting examples).

Larry Downes, Chunka Mui: In Search of the Killer Application. Conquering new Markets with Digital Strategies. (This too is a guide full of examples for all those who want to understand the digital world and survive in it.)

Axel Zerdick, Arnold Picot und andere: Die Internet-Ökonomie. Strategies for the digital economy. Springer 1999. (An overview particularly rich in facts, with many tables and also useful as a work of reference).

Marshall McLuhan: The Magical Channels – Understanding Media. (The New York Times called McLuhan "the most important mind since Newton, Darwin, Freud and Einstein". (A classic sharpening the eye for changes).

Philip Evans, Thomas S. Wurster: Web Att@ck. Strategies for the Internet Revolution. (A US best-seller which illustrates how the increasing separation between the economy of goods and the economy of information leads to the disassembly and re-combination of existing business models).

Michael Dertouzos: What Will Be. The future of the age of information. (An insight into the future of information technology from one of the field's leading minds)

Ray Kurzweil: Homo S@piens. Life in the 21st Century – what will remain of Mankind? (Provocative visions of a computer pioneer).

Esther Dyson: Release 2.0. The Internet Society. Rules for our Digital Future. (The "First Lady of the Internet" (New York Times) reflects upon the social consequences of the technology).

Steven Johnson: Interface Culture. How New Technologies Change Creativity and Communication. (A critical presentation of modern computer technology and its cultural consequences).

Peter F. Drucker: Management im 21. Jahrhundert. Econ 1999. (The most recent book of the ninety-year old Grand Master among the Management Gurus. A very precise critique of an understanding of management reduced to profit maximisation)

Charles Handy: The Progress Trap. (One of the most profound books about the future of labour and organisations).

- i Marshall McLuhan, *Understanding Media* (1964)
- iii Ulrich Klotz, *Gewerkschaften im Strukturwandel: Neuorientierung von Selbstverständnis und Aufgabe der Arbeitnehmerorganisationen*, in: Hans-Jörg Bullinger und Hans Jürgen Warnecke, (Hrsg.), *Neue Organisationsformen im Unternehmen. Ein Handbuch für das moderne Management*, Berlin, Heidelberg, New York 1996, pp. 205-213.
- iii Peter Schwarz, *Management in Nonprofit Organisationen*. Bern, Stuttgart, Wien 1992, p. 539
- iv Ulrich Klotz, *Ansatzpunkte sozial gesteuerter Innovation*, in: Udo E. Simonis (Hrsg.), *Mehr Technik – weniger Arbeit ?*, Karlsruhe 1984, pp. 123-140
- v Stephen A. Herzenberg et al., *New Unions for a New Economy*, in: *The Democrat*, 3/4 1998, pp. 8-12
- vi David F. Milleker, *Die Krise der Gewerkschaften*, in: *HWWA-Wirtschaftsdienst*, 11/1999, pp. 660-664
- vii John Vines, *From Trade Unions to 21C Organisation*, Manuscript; <http://www.apesma.asn.au/>