Preface

The Japanese economy has now come to its key turning point. This is illustrated by almost no economic growth experienced by Japan throughout the 1990s. Although signs of economic recovery were felt several times, they were invariably followed by an economic slow-down, and there were even the periods when negative economic growth was recorded. Japan’s turning point is also illustrated by the stock price fluctuations during the past 10 years. The so-called bubble burst in 1990, but even now the stock market level is only about 1/3 of the highest peak experienced in the past. (Note 1) Keeping pace with these developments, the income of workers has tended to rather decline during the past several years. Among companies, there have been large-scale bankruptcies one after another. Company restructuring has been implemented at an accelerated pace. This has inevitably created a higher rate of unemployment. The unemployment rate is now 4.8%, and there are as many as 3.5 million people who are out of work. (Note 2)

In the meantime, the Government has taken various measures to stimulate the economy. These measures, however, have not necessarily been very effective. The Government’s fiscal policy of promoting public projects and works can be criticized as excessive. As to monetary policy, the interest rate is at such a low level that it is unprecedented in our history. Nevertheless, business activities have remained depressed and recovered little. The expansionist financial policy has resulted in an increase of the outstanding balance of long-term debts. A possible crisis of future
public finance has even been rumored. \textsuperscript{Note 3} The new Cabinet has responded by declaring that they would undertake the drastic reform of the so-called post war socio-economic society of Japan, under the slogan of “Reform without Sanctuary.”

While the economy and society have been stagnant, the only exceptional industrial sector that has been continuously growing is the IT related industry. The IT industry has contributed to as much as 70\% of the recent incremental added value, including direct and indirect added value. It certainly is one of few exceptional growth sectors. As we shall see, this industry has not only achieved rapid growth and development, but has been having a tremendous impact on industries, corporations and workers in other sectors.

As discussed in the USA, there are still many who believe in the arrival of the “New Economy.” \textsuperscript{Note 4} Certainly, it would be reasonable to expect some investment effect if about 20\% of the annual capital investment is made for IT. \textsuperscript{Note 5} However, even in the US, the most advanced country in IT, the stock prices of high-tech companies collapsed to less than one half of their level at the beginning of 2000 when so-called IT bubbles were burst. Currently, the US is in a recovery-readjustment period. \textsuperscript{Note 6}

It can be said that on the one hand the development of business activities and the emerging growth of IT, especially internet related business, in the US over the past ten years have followed the same path and have been considerably interrelated. On the other hand, it can be pointed out that the discrepancies in income among US workers have widened during this time. In other words, while the number of high earners and their amount of income has increased, the group of people on a lower income has also grown. It can thus be said that the so-called bipolar divergence of income brackets has become accentuated. \textsuperscript{Note 7}

In Japan, too, there is no denying that there is a possibility of divergence of income brackets. The principle of making income uniform, which has been established in Japan’s industrial society, seems to be deteriorating. Besides, in order to encourage new projects, the tax rate has been modified to allow company founders to obtain a founder’s profit. Amongst enterprises, restructuring has become a general practice, while the function of big business to maintain employment has been diminishing. At the same time, the view that vainly maintaining employment would not necessarily help structural reform has rapidly been expanding. Also, it has now become general practice in the IT industry to use performance and real ability as criteria of evaluation, instead of following Japan’s traditional work evaluation system.

From a broader perspective, we could say that the economic principle and order of the industrial society is now being shifted to that of the information society. It is the responsibility of corporations, as individual economic subjects, to cope with this shift. Therefore, it follows inevitably that the organizational structure, labor structure and labor system, that are the core of corporate management, should also be changed.
Since there is not enough room to discuss all of the elements of change in this essay, I would like to focus my discussion on three points. One of them is the working environment and working structure of information workers (IT workers). Here I mean information workers in its narrower sense, as the people who work in the information and communication industries. In the broader sense, one can also identify information workers in all industries as those who work for a majority of their time in the transmittance, accumulation and transaction etc. of information and knowledge. However, the IT workers of the narrower sense are those who support the growing information industry. Their working structure within the industry is different from the traditional one and I would like to discuss it here. \( \text{Note 8} \) Secondly, as information and knowledge have become more and more important for organizations, I would like to discuss how the structural principles of an organization should be changed to reflect this. Thirdly, I would like to present an analysis, based on neo-Keynesian concepts, on how we should interpret the so-called income bipolar divergence phenomenon, where those who work in the newly growing information sector and its exclusive service sector, get higher incomes, while in the non-expertise manufacturing sector and service sector there has been an increasing use of part-timers and a progressive lowering of income. In summary, we have to study how to interpret the phenomenon where the workers’ market permits some workers to get a higher income while a separate income-bracket of workers have a diminishing wage as a result of the impact of structural adjustment etc. and a fully competitive labor market.\( \text{Note 9} \) In other words, in an extremely broad sense, I would like to theorise how the corporate structure will be changed by IT and under which principles its labor force will be reorganized.

### 1. Currents of Change in Economy and Society

Now, in which direction can we say that the environment surrounding the corporations, organizations and workers is currently changing? Let me look here at the general and universal currents that have been identified by many people. \( \text{Note 10} \)

First, it must be recognized that the historical stream in which the country has been flowing has changed course fundamentally. The lack of concordance between the big change in the historical current and the individual subject has become large because memories of successful experiences in the post-war period of high economic growth under the traditional system has given it a sense of inertia and auto-normality. This is now generally considered as a cause of the stalemate in economic society in the ‘90s. It seems that long-term economic stagnation causes people’s consciousness to tend toward self-protection, as shown by reactions such as the consumption depression. \( \text{Note 11} \)

To be able to achieve a new development you must first calmly observe the current of the times, and ensure that the socio-economic system is well adapted to it by significantly changing traditional concepts. For this purpose, however, destruction must precede creation. \( \text{Note 12} \)
Let us now identify the major currents that will bring about inevitable impacts on the Japanese economy and society in the future. The first current is demographic change. Japan’s population has quadrupled in a little over 130 years since the Meiji Restoration. However, it will now finally start declining, and can be expected to decrease within less than 10 years from now. It is said that at the end of the 21st century, the Japanese population will be about one half of what it is now. This expected population decline will have a sufficient impact on all Japanese people to have them anticipate, directly or indirectly, a decline in the scale and vigor of our national economy. This is because economic activities eventually aim at satisfying individual demand. At the same time, a smaller number of children and more of elderly people will bring about changes in the population structure that will cause further changes to the social system. Therefore, it is getting clearer to all that it will be difficult for us to maintain the basic land infrastructure alignment and social security system in the same form as they are now. Demographic shifts will have considerable influence on the labor structure and organizational structure that are the theme of this essay.

Secondly, how can we structure a continuous development mode by overcoming restrictions in resources and energies? A succession of environmental problems have started to show the deep connection between business activities and the daily life of individuals. Energy problems are now becoming a further restricting factor on economic activities. It is difficult to solve these environmental problems just by maintaining the conventional mass production system. It is now required, both at home and abroad, to drastically convert the conventional system and to build up a so-called “cyclic style economic society”.

The premises of the new economic society can be seen in the counter-measures that are needed to transform the current system. First, in today’s post-mass production society today, where we have in principle completed the catch up with Europe and America, and economic society has matured, it is impossible and unwise for corporate management to attempt to maintain conventional business styles. The premise for the new organizational system and labor structuring that can replace the traditional approach can be summarized by two observations:

The first is the transfer from the industrial society to intelligent society. Now that material affluence has to a considerable extent been satisfied, people have started showing stronger tendencies to look for individuality and diversity. Moreover, with the incessant technological progresses, the materials and services that are supplied have become further advanced and diversified. In the future, intangible intelligent capital such as information, knowledge, design etc. will become the driving forces to maximize economic growth and corporate profit, as well as human efficiency. The underlying economic principles will shift from the “Economy of Scale” to the “Economy of Scope.” An increase of white-collar workers has taken place in the ‘80s. However, this
white-collar economy is now being replaced with the next one. What is now required is an organizational and labor structure that can cope with such trends. □ Note 13 □

Secondly, there is a transition from a society centered around big enterprises to a network society. Computer technologies, that have been developing in the direction of being bigger and faster, have shifted to network technologies, with more compact and faster models keeping the pace with so-called down sizing of the companies since the latter half of the ‘80s. At the beginning of the ‘90s, commercial utilization and particularly the spread of the Internet have spurred the existing trends toward networks. Thus, total globalization in information is now being achieved. In other words, the formation of a “Global Information Economic Society” is now in progress, one that will coordinate the world through information.

With the change of infrastructure principles for added value creation in such an economy, globalization is entering into a new stage. In other words, the trade of goods and services and the transaction of capital have become easier at the global level, and a unilateral Global Market is now just emerging. The linking of a wide span of people and companies in terms of information and goods, or an “Economy Network”, has had economic effects both in and outside companies. How to comply with such changes is now becoming one of the core issues for evolving corporate strategies. □ Note 14 □

2. Present Situation in the Information and Communication Industry and amongst Information Workers

In order to comply with the new economic system, we have now realized that it is necessary to convert the Japanese industrial structure and change corporate organizations. In this way we can create new added values by overcoming various economic constraint factors. One of the most promising new areas is the information and communication industry. As we have seen, under the current economic depression it is from this area that most of the new added values have been created in both Japan and the US. The expansion of the Internet, the system that symbolizes this achievement, and the growth of the related industries has been subject to excessive expectations and evaluations. This has brought about the rapid increase of stock prices that exceeded greatly the level of the actual economy. As a result, the recent Internet bubble emerged. Since it was a bubble, it was inevitable that it would burst. □ Note 15 □

The Labor structure in this sector, where such high expectations have been harbored, has taken a different style from that of the traditional industries. Furthermore, as the information industry expands and as IT, as well as its organizational structure and style, penetrate the traditional industries, those industries too have been greatly impacted. Let us now look at this situation.

First, when we look at the added value of the information and communication industry, we realize
that it has rapidly increased during the past 20 years. In fact, it has grown almost three times, so that by 1998, its added value was already the largest among all the industrial sectors. The only comparable sector was construction. However, the value of the construction sector was pushed up by the increase of public spending linked with the bubble economy. This industry is now in the midst of a big curtailment that will gradually cause it to shrink. The iron and steel industry is even now in negative growth. From this it is clear that the Japanese economy will gradually shift from an economy with heavy industries at its center to the one that is based on services and information. Among other industries, there is none that has grown so large, and we should say that they have more or less completed the course of their maturation.

This is one of the reasons why such high expectations have been held of the information and communication industry. As we have seen, since the information and communication industry is involved in the creation and transmission of information and knowledge, it is considered to be effective in overcoming various economic constraints and to create new values. However, as shown by Fig-2 below, employment in this sector has not been growing.

Fig-1  Trends of Nominal Added Value by Industries

Fig-2  Annual Change of Those who Work in the Information & Communication Industry
Population of Information Workers (in its narrower sense) was a little over 3.8 million in 1998. This accounted for a little less than 7% of the total working population. In terms of absolute number as well as percentages, the sector has not shown significant growth since 1990.

We can now consider the situation of workers who are engaged in the information service industry. They mainly consist of information software developers (SE, programmer etc.) and information related service workers. The number of the former in 1998 was a little less than 370,000, while the latter was 1,210,000. Although software developers account for about 10% of the total workers in the information and communication industry, the annual average increase in their numbers for the past 20 years has been a little over 13%, and is expected to continue to grow in the future. On the other hand, the growth rate of those who work in the electric communication sector has been slightly negative, with an annual average –2.6%. Since the network incorporates a large scale installation industry, this suggests that a substantial rationalization has been achieved.

According to the “2000 Edition Basic Statistics of Information Service Industry,” the willingness to hire information service industry workers will not decline even for F/Y 2001. In particular, there is a strong feeling that there is a shortage of talents in the network and Web sectors. More and more companies are trying to cope with this situation by hiring experienced persons over new graduates. On the other hand, according to the Information Technology Association of America (ITAA), there is a shortage of 340,00 or more of IT engineers all over the US, even though it is an advanced country of information technology. It is said that the USA even provides facilities for overseas foreign engineers to obtain working visas. Likewise, the shortage of IT engineers in the
EU is deemed to amount to 1.6 million. It can be thus seen that in spite of this low growth era, demand for IT related workers has been high.

Next, the information and communication industry is unusual in comparison with other industries because for some time an evaluation system based on the criteria of performance has widely been introduced. Reasons that have been given for this are that the industry is relatively new, that value added achievements are made by personal contributions, and that there are big differences in the ability of workers. Nevertheless, it has also been said that there has been a discrepancy between ability evaluations and actual performances due to the difficulty of making ability evaluations alongside continuous technological innovations. [Note 16]

As a summary of what I have been discussing so far, the fact that the number of information workers have not greatly increased, from a macroscopic viewpoint, is an expected result of productivity enhancement due to the technological innovation of this sector. However, this does not mean that there is an excess of all sorts of information workers. Instead, highly skilled information workers are in short supply, not only in Japan but in the US and Europe. Those information workers who have only the ability to produce traditional information goods of routine type work are being replaced and eliminated by IT. Conversely, workers who have creative and innovative abilities are demanded more and competed for. Their wage levels are tending to get higher, so that, in fact, information workers are also showing a bipolar divergence.

This means that information industry resources and organization strategies have to incorporate incentives that ensure the hiring of excellent personnel and letting them stay, how to raise the talents who can create added value with market competitiveness, and how to structure the HR system to eliminate the seniority factor. However, we must recognize that these imperatives are not only valid for the information and communication industry, but are also becoming the strategies for companies belonging to other industries as IT expands.

3. Theory for New Organizational Structure

We have seen that Japanese companies are in need of new organizational principles and organizational systems. It can be understood as a principle that IT helps make an information processing cost reduction in the organization, and contributes to the creation of new information value there. However, it cannot display its full effect as long as conventional organizations exist as its premise. [Note 17] I will discuss what the new organization should be after outlining the traditional organization.

The basic form of organizations is hierarchy. An organization can be described as a continual human system for a plural number of people to collaborate to achieve a common objective; such an organization must have order and discipline. If there is no order, it would either be impossible for many people to achieve the organizational objective as a whole, or it would cost much more to
There are several basic elements to an organizational hierarchy, here I will cite four of them. The first is that an organization has plural classes, for otherwise it cannot be said to be a hierarchy. Secondly, there are subsystems within it. We can think of it as having independent systems that are relatively loosely connected. This means that a hierarchy consists of specialized and divided tasks. Thirdly, subordinates have but one superior. If one has a plural number of superiors, then when their decisions are different from one another the organization would be confused and could not be controlled. Fourthly, there should be only one person who can make a final decision. Unless there is such a person who at least fulfills this position in a nominal role, the will of the organization as a whole cannot be integrated.

A network has the opposite factors to the above. Let us consider them in parallel with the above four factors. First, the concept of a class is not required either to originate a network or ideologically to explain it. Secondly, the network may have subsystems. However, since there are no classes, (or only comparatively insignificant classes), it is dubious whether they can be termed a sub (lower) system if it is an independent system. Thirdly, since the network does not have a superior (upper authority), this cannot be a factor. Fourthly, an overall integral decision maker is not necessarily required.

The characteristics of hierarchy-type organizations are, therefore, quite opposite to those of network-type organization. However, actual organizations have varied styles and not all the factors are always be required. Besides, there are always many cases where, although individual company is of hierarchical structure, there is a network organization between the companies. What has been described here has the character of two ideal types of an organization.

When we consider relation between organizations and information, there can be many viewpoints. Here, I would like to develop the argument from two aspects. The first, as we have already seen, concerns classes. The second concerns contact with clients. In a hierarchical organization, class characteristics are stronger. Since there are many levels of superiors, information has to gradually go up through the classes before it reaches the top superiors. Superiors work as a filtration system of information. They put plural subordinate information in order, summarize and evaluate it and transmit it to upper superiors. This is normal in a very large organization. If it does not exist, the superior would need to handle a tremendous amount of information when they are in fact unable to do so.

However, the more levels there are in the filtration system are, the more that information will be obliterated or altered, and the higher is the possibility that important information will be overlooked at a higher level. Moreover, since the superior evaluates subordinates’ performances, it is highly possible that the subordinates will communicate only that information which they calculate their superior will like. It can easily be anticipated that such structural bias would distort information.
By contrast, the network type organization, having a more minimal class character, has much smaller distortion of information as compared with a hierarchical organization. Nonetheless, let us again consider the existence of mid-management. If their information processing activities help lower the information processing load of their superior, the functional role of the class cannot be denied. This could be a drawback or an advantage of a network-type organization. In a network-type organization, the amount of information to be processed by a superior tends to increase, and their workload is thereby increased. As a result, less attention is paid to their duties to create added value.

In this respect, if the mid-management of a hierarchical organization not only transmits information but also creates it, they could be said indispensable for the organization. Therefore, although, a hierarchical organization is often negatively evaluated in modern management science, it is not necessarily inefficient. Rather, we should say that its success depends very much on the actual management methodology and its incentive design.

A hierarchical organization has a clear ordering route, and is particularly suitable for an organization where rigid control is required. By contrast, the network type organization is in general difficult to be coordinated as a whole the freedom of its members is higher. It would, therefore, be difficult to apply an ideal-typical network organization to big company organizations.

Next, let us study the extent of contacts with clients. Since customer oriented management rather than supply oriented management is required of companies, client side information is important and each company is eager to collect customer information. From this perspective, the number of employees who directly contact the clients would be bigger in a network-type organization than in a hierarchical organization of the same size. In other words, as more employees contact the clients, they can collect more market information.

The more that information becomes important to the modern company, the more that there will be a general tendency to shift from hierarchical to network-type organizations. There are, however, many problems for network-type organizations as well. Firstly, as the classes are broader, one supervisor is required to supervise more subordinates. The expansion of administrative span can bring about excessive information load on the superior.

Secondly, superiors are not simply transmitters or go-betweens of information. They are at the prime of their working life and are highly versed in their jobs. They can therefore function to create as well as transmit the information. If the layer of such staff becomes thin, information creation strength will be weakened accordingly. However, for mid-management people, such a role is unnecessary so long as they work at the very front of the company. As they are exposed to more raw information, they should still maintain sufficient spirit to take on new challenges for the company.

Thirdly, it is an honor for the subordinates to be promoted. In a society that places great significance on titles, like Japan, promotion is an important labor incentive. It is worried that such incentive is reduced if the layers of supervisors slimmed down. However, the supervisor here is a
coordinator and is not a nominal managerial position. In response, some companies give out nominal managerial titles without real management duties. The Ministry of Labor compares actual wage levels and comparative wages against peers. These wage comparisons allow almost everyone to identify classes beneath them. Incentives can be given in such a way that technical professionals as well as managers may also get higher wages, as those who are not suitable for managerial positions may display their ability at their field of expertise.

As can be seen, there are many problems even in a network-type organization. Let us consider how to overcome them. First, so-called empowerment has an important role to play. Empowerment means that authorities and responsibilities are delegated to subordinates rather than the superiors controlling everything from above. In this way, the workload of managerial people can be greatly alleviated. IT has an ability to enhance this empowerment. Secondly, in order to achieve this, it is necessary for each individual worker to have a sufficiently high ability and high self-discipline to handle the situation. In other words, it requires personal mastery. Unless each individual has a certain degree of self-discipline and decision-making ability, it would not be possible to delegate authority. Thirdly, it is necessary to thoroughly communicate to them the corporate vision and strategic information. In fact, they would be sharing a part of management responsibility. Sharing of information is indispensable for that purpose.

Where the importance of information sharing is stressed, an underlying change in the background organizational structure takes place. IT is expected to work as a factor to retain and coordinate the workforce. By sharing information sharing it can help create a common vision that unites workers who were once separated. Finally, the evaluation method of individual performances should also be changed. The fact that employees can take on fairly big responsibilities and decision-making would not simply mean that they actually undertook such actions. Objective measures of the added value actually obtained from individual employees are more important than their potential roles. In the Japanese companies, the evaluation based on performance and real ability is becoming more and more important. This development is taking place in the context of a growing role for information networks.

Changing business process in a large-scale organization would give considerable frustration to many of the workers. It would be difficult to maintain the organization unless the Japanese economy and society as a whole were also changing. It is important to present organizational innovation calmly without being indulging paternalism.

One of the keys to innovation is the fact of IT itself. One of the most important strengths of IT is found in its support for “learning.”

What I mean by “learning” here is not something used to obtain more information but the ability to acquire the result that is really to be obtained. In this respect, it is not “learning” just to get information. We can say that “learning” has been achieved only when we finally obtain our objective
after repeated trial and error based on obtained information. In the modern age, when processing huge amounts of information and prompt management actions are required, it is not sufficient for there to be only one person in the organization who learns. All personnel should, in fact, be those who learn. In order to survive severe market competition, it is necessary to build up such an organization where all the constituent members are strongly determined to continue their learning, with a firm will to achieve their respective visions.

4. Toward Structuring a New Labor Organization Framework

The introduction of IT has taken place during a time that could be called an interim period. The number of IT workers has been increasing at a time when wages have been fixed at a low level and unemployment has been rising. Neo-Keynesianism provides a theory to explain such phenomenon. This theory is different from established Keynesianism. It is new in that it makes it clear that wage fixing at a lower rate and unemployment are caused by the rational reasoning of workers and entrepreneurs. However, it is also true that the premises assumed by neo-Keynesianism have been substantially changing as seen in such new developments as recent trends in income division, the increase of job mobility of IT workers, the high level of IT workers wages, etc. as well as changes in labor evaluations.

There are many discussions about the neo-Keynesian theory. I would like to introduce two representative ones here, and also consider how to overcome those anomalies that the theory cannot be explain. First, let us look at Implicit Contracts Theory. If a company can be neutral toward risks, it is only interested in the scale of long term wage levels. The workers are considered to prefer a certain stable wage scheme rather than the one that makes the wage much lower during the recession while it increases considerably during the economic boom, and the company has room to accept such contracts.

There are, however, objections to this theory. The reason why the workers look for stability in monetary wages rather than in real wages is said to be because the monetary illusion is assumed to be real. It is dubious how rational this assumption itself is. In particular, in an age when so much information is available through the Internet, this is all the more true. Besides, the models means there is a long-term equilibrium in the labor market; it does not explain the existence of long-term non-spontaneous unemployment.

Moreover, there is a question whether or not IT workers as a whole can be said to have avoided the crisis. The market for information workers is a sellers’ market (particularly for those who are highly skilled). Whether or not they have been able to avoid the crisis depends on the extent that they have independent production measures. From this point of view, IT workers have their own production measures (knowledge and skill for production), which gives them high job mobility. Because of this, they may not see the need to avoid risks. On the contrary, the companies have a much greater
incentive to avoid risks. This means that incentives are needed to retain capable IT workers and wage discrepancies may rise because of this. However, most information workers are not so-called “stars.” They, too, are considered to support the generally accepted need for company stability. Besides, since any particular IT technology is expected to soon become obsolete with the lapse of time, incessant efforts to keep up are required. In these circumstances, it may be that a majority of IT workers wish to secure stability. It is not so unreasonable to understand wages separately by dividing the incentive between a limited number of stars and the majority of ordinary workers.

Next, let us consider the Efficiency Wage Hypothesis. It is not irrational to consider that although their nominal working hours are the same, actual labor supply differs from one worker to another depending on how seriously they work. That is, although workers have worked as a formality for the same number of specific hours, their actual works depend on the level of their endeavor. Lowering of real wage levels may also lower the working spirit of employees until they eventually spare the effort put into their tasks. Even though non-spontaneous unemployment exists in the labor market, it is not necessarily advantageous for the company to lower the wage level of workers. In particular, IT workers are always requested to display ideas and creativity, and their willingness to work in this way has a decisive impact on the value of information sources. Thus, even though it would be possible to hire the non-spontaneous unemployed, the company wishes to maintain a certain wage level. Fig-3 explains the situation.

![Effort Curve and Determination of Effective Wage Level](image)

When the real wage is too low, the working spirit declines precipitously. On the other hand, when the real wage is too high, the working spirit will also deteriorate and at the same time there is a limit on improving marginal productivity by individual effort. Therefore, the effort curve is estimated to become S shaped. If the real wage is lower than a certain point, it become of an increasing return
type, and if it is higher, it becomes of diminishing return type. However, how to specify the shape of
the S curve is not well determined. In particular, for information (intellectual) workers, it could be
said that the curve would show a strong S shape. Nevertheless, even for the same information
workers, a large gap in ability can be observed. Therefore, their effort would depend on their age,
sex, skill, and level of intelligence.  Note 22

At which point is the real wage determined? For instance, at \( \omega \), the unit effort level for real
wage (on average) becomes \( \beta \). If this is gradually upgraded, it becomes the maximum at point E.
At that time, the effort level of \( e^* \) becomes identical to the threshold production level.

There are, however some workers who cannot produce results in spite of their efforts. It is not
possible to expect them to work at an efficient effort. Moreover, they may even need to undertake
repetitive manual labor that does not require individuality. This means that similar service industries
need to be organized with completely different labor incentives.

To put things another way, on one hand there is a labor market that can be described as a so-called
“MacDonald Phenomenon.” On the other hand, it is necessary to recognize an “Expertise Workers
Market” as assumed by the Efficiency Wage Hypothesis.  Note 23

On the contrary, most researchers have considered the production principle of industrial society as their premise in traditional labor
market theories. But this society is now becoming one that is escaping from industrialization.
The change in ratio of different types of workers and labor contents has started splitting the
unilateral labor market. In fact, according to the neo-classical school labor market theory, we
should admit that it would be impossible to explain fully the existence of the unemployed. If the
market, as assumed by the neo-classical school, is the mechanism by which wages go up and down
with flexibility according to labor supply and labor demand, the incentives for information workers
would be lowered. In fact, there is a tendency of excessive demand for capable intellectual workers,
and a continuous out-flow by recruitment of such talents to other companies that disturbs company
operations. Besides, if the labor quality is more important than the labor quantity, and if to secure
capable workers alone would have a higher value rather than hiring many more mediocre workers,
an incentive design would be required to get them irrespective of the overall labor demand.

Realistically, when we look at the last few years of economic depression, the wage level has never
dropped, at least so far as information workers are concerned.

There are situations where explanations by neo-classical school market fits better. In the service
industry the standardization of work contents and use of manuals, has made it possible to increase
the labor supply. The wages of service industry workers, as seen by so-called MacDonald
phenomenon, have never increased. On the contrary, even if the nominal wage level remains
unchanged, if there is a shift from regular employees to part timers, this may be considered as a
decline of real wage levels.
Fig-4 shows the two different labor market theories. On the right hand side is the labor market where the Efficiency Wage Hypothesis is developed. When demand for labor increases here, the Ld curve shifts to the right. Then, the latent unemployment rate is considered to decline. On the left hand side the market is that of the neo-classical school. It is the market where, in general, wage levels fluctuate according to demand–supply relations.

IT will have various influences. It will bring about a digital divide, and excellent IT performers will enter the Efficiency Wage Hypothesis Market (on the right hand), while those who are not would enter into the neo-classical school market (on the left). However, technological progress in IT is so rapid that it has the potential to make all workers obsolete. The enhancement of information technology provides everybody with a spread of information and knowledge, and an easy way to obtain them. It is, therefore, easier than before to catch up with changes. It is possible that IT has the potential to dissipate the monopoly of information and knowledge to a limited number of people.

It has been suggested that IT demand would create new demands. However, if we look at the last several years, this is contradicted by the fact that the number of workers in the information and communication industry has not increased. In this sector, the scale of added value is the biggest amongst all the industries, and its labor productivity is also high. In particular, the Total Factor of Productivity (TFP) in this sector is overwhelmingly higher than other industries. Therefore, it would be necessary for this sector to grow further in the future in order to create more varied occupations and jobs. Note 24

However, there is also a possibility that workers cannot be easily transferred into IT due to mismatching. For them to change their job, training and education, a higher degree of education will play all the more important role in allowing for such change.

We may wish to satisfy unmet demand for IT workers abroad. This may be considered to be the
securing of new labor. A cyber labor structure would further progress under these circumstances. Therefore, a new organizational structuring principle to which everybody abroad may join would eventually become necessary. \[\text{Note 25}\]

At the same time, almost 90% of employers are in industries of non-information and non-communication. It may rather be necessary to enhance information literacy of the many white-collar workers there (IT workers in the broader sense), to lower information processing cost, and at the same time to create new added value at their respective industries and companies. To this end, it would be necessary to modify the conventional type of organizational structure and redesign it so that information and communication system have a greater impact upon it.

**Before Closing**

IT utilization organizations tend to be either of a network type or a learning organization type. However, acquisition of the following five disciplines is necessary in order to achieve an effective organizational transformation.

First, the most important discipline is "personal mastery." This means to clarify our own visual field and to enhance and deepen ourselves at a higher level. To establish “personal mastery” means that we have to recognize the most important mission of our life, and to continue accumulating incessant efforts to achieve it. IT related technology in particular progresses so rapidly that a higher degree of self-study discipline is required. At the same time, IT is also a tool to accelerate self-study discipline. Those who are negligent of this requirement are liable to be eliminated from the ranks of IT workers and be thrown into the completely competitive labor market, as we have seen above.

Secondly, is the need for “Structuring of the Common Vision.” Instead of forcing the management vision onto members of an organization, it should be a vision shared by everybody. It is necessary that through the continual dialogues between the management and each of the individual members of the organization, a vision that provides an ideal image of the organization should be disseminated. In particular, if the company adopts a performance or achievement oriented management system, there may be a possibility that the consciousness or working attitude of workers may become diversified and varied, and the overall performance of the organization may deteriorate. A shared vision would prevent such deterioration and keep workers united.

Thirdly, “Team Study” is needed. This means that team members cooperate with each other to endeavor to enhance team efficiency, so as to produce the results desired by the team members. From the concept that a team’s ability exceeds that of an individual, it also enhances individual ability. Team study is carried out in order to achieve a common vision. Team study that allows individuals to display their ability is particularly desired. This form of organizational operation is becoming more and more important where workers are respected as individuals and at the same time team advantages are sought. It would be there that the real value of IT itself can be demonstrated.
Fourth is the “Conquest of the Mental Model.” What is meant by a mental model is a spiritual image or form of recognition that is latent deep in the human mind and stimulated as a specific reaction under particular circumstances. Since this mental model is an implicit frame of mind, it has a considerable impact on various actions. It is an urgent issue, for both management and information workers, how to establish new mental models to cope with a new management environment that is different from the past. For IT, there is a so-called “IT Mental Model.” It is important to absorb this model promptly. It is, in a sense, a premise for information literacy. Unless it is absorbed, organizational structures will continue to follow conventional norms no matter how thoroughly IT may be introduced.

Fifth is “System Thinking.” Since phenomena react with each other, it is necessary to consider the whole entity rather than its parts. Since we have so far been following macroscopic growth trends, we could manage to achieve growth as such in spite of the existence of irrationalities. However, hereafter, how to make best use of limited resources will become an issue. Therefore, it is necessary to seriously reexamine the relation between the entity and individuals who comprise it. Only then will IT will be widely systematized in the economy and society. The, so-called “IT System Thinking” that has incorporated such trends could then be looked for.

In the ‘80s, the organizational power of Japanese companies threatened American ones. However, due to coercive management restructuring after the bubble burst, Japanese companies are said to be rapidly losing their inherent strength. Moreover, as we have seen, the optimum organization structure for so-called e-business is still being formed. It is, therefore, once again time to try to fully understand the principles that the organization has, and at the same time to promote active communication between individuals and the organization as a whole, so as to further enhance the performance of the entire organization.

Japanese companies should endeavor to establish learning organizations by making the best use of IT. This learning organization will require more personal mastery on the part of the workers. At the same time, Internet and all other IT technologies would allow them to improve their abilities. For companies, it is becoming more possible to obtain information resources from outside rather than from within. This will push the trend toward the shrinkage of the management scales, and accelerate the structuring of a new internal organization. Acquisition of information and knowledge become more important as incentives for inner information workers. It is indispensable to provide them with information and knowledge on the basis of the organization as a whole for its maintenance and development. Moreover, this will make it possible for the company to assure that its information workers produce excellent information goods.
Notes
Note 1: Judging from the Tokyo Stock Exchange Index, new markets have been created and many companies have been newly quoted on the market. Therefore, the total amount of all the stocks in Japan may have increased. In any case, it is certain that the performances of the majority of large companies who have so far been mainly supporting the Japanese economy are depressed.

Note 2: When we look at the unemployment rate, it is about one half of that of Europe. However, in the case of Japan, since the working rate of women is low, this may have had the effect of lowering the unemployment rate. In the future it is expected as a matter of course that the working rate of women will increase. Creation of more employment under these circumstances will be a challenge.

Note 3: This may mean that the marginal productivity of public spending has declined. If we return to the basic principle of political economy, the introduction of the same kind of production factors would lower productivity by the law of diminishing return. For instance, if we compare the construction of a road carrying an extremely high traffic with a road carrying no traffic at all, the effect after their construction would be remarkably different.

Note 4: The term New Economy used to be used by journalists, and has no established definition. In "A New Economy?" OECD, 2000, OECD said, “Few studies clearly define the term “new economy” and it seems to mean different things to different people.” They go on to state that the three characteristics of the economy appear to be, first, the degree of economic growth, secondly, the influence on the business cycle, and lastly the difference in the economic growth principle. The author has tried to undertake a more detailed analysis. See ‘Joho Shihonshugino Rironteki Kosatu – Nyu-Ekonomi-no Hihanteki Bunseki’ (Theoretical Observation of Information Capitalism – Critical Analysis of New Economy,) Sogo Seisaku Ronso (Overall Policy Thesis) Shimane Prefecture University, 2001

Note 5: Since around 1995, the ratio of private capital investment has been stable at around more or less 12%. As against GDP, it has been around 2%. As to the former, it is true that it has increased, because it is about double as compared with the level in 1992. However, it has been lagging far behind as compared with the US.

Note 6: However, in the US, sale of PCs has fallen below the level of the previous year level. It has now become clear that even in the US, the purchase of PCs accounted for the majority of information investment. This may mean that there has been an excessive investment in information equipment, and we can also point to a lack of equilibrium in investment distribution.
Note 7: In the US, while the high-income bracket has increased, the low-income bracket has also increased so that the middle class has been disaggregated, pulled apart in two directions. However, it is a fact that the economic boom during the past 10 years has brought about an increase of absolute economic affluences of both of these two classes.


Note: 9: It is said that even in the information sector, the wage level of data entry operators and non-skilled programmers tends to get lowered, or shift away from regular employees to part timers. However, it is also said that information consultants and information strategic system managers have been very much sought after as there is excessive demand for them.


Note 11: First, it is said that consumer commodity prices have become deflationary in F/Y 2001. One of the causes is stagnation of consumer demand. The main reason is that the growth rate of cash wage income has been negative in 1998 and 1999. Nonetheless, it has been proven that the household saving rate, that was a little over 10% toward the end of the bubble period, has now recovered to 13%.

Note 12: The information society tends to change as the information capital availability increases. It is considered that its development should be coordinated in balance with other forms of social capital. For example, according to the survey by The Economist Intelligence Unit (EIU) etc., Japan remains No. 18 (out of 60 countries) as to e-business proficiency although a high tech economy has been developed in Japan. Incidentally, the US is at the top.

Note 13: In order to display the economy of the net, it is necessary first that the individual remains
self disciplined, unique and professional. With this as a premise, it is possible to generate individual value through IT links.

Note 14: Since the company should abide by the environment, it has no other choice but to go through IT reform if the environment is modified with IT. Therefore, once IT reform starts in society and industries, it progresses outwards. Although hardware modification through IT is relatively easy to achieve, IT reform of software, including information literacy, is not so easily obtained.

Note 15: After the burst of the Internet bubble, the average stock price at NASDAQ, where many high tech companies have been quoted, has come done to less than one half of its previous rate. The background to this was that a majority of Internet related companies were actually in deficit. It is now becoming clear that the progress of IT reform and the profitability of the companies who pursue it are not necessarily interrelated.

Note 16: It is relatively easy to measure and evaluate individual performance in the information and communication industry. Why then are there companies who adopt a job-based wage determination system? To explain this, we can first say that the evaluation criteria have not been established there. Further, there are many employees who join after changing occupation from another industry.

Note 17: It might be well conceived that even if information costs have been curtailed by IT, if mid management is maintained only as an information go-between, it complicates communications and increases costs.

Note 18: Given the concept that the organization has been structured to lower information processing costs, it is considered that scale of an organization should be determined by a comparison between both inner processing costs and costs of outsourcing. Refer to my publication, Keizaishakaino Kisorironn I (Basic Theory of Economic Society I), (Gakujutsu Tosho Shuppan, 1999)

Note 19: IT is considered to have the objective of creating information and knowledge by way of input and output of information. Therefore, IT should be utilized in such a direction that learning and study may further be stimulated. This may be one of the reasons why a mismatching between IT introduction and the non-occurrence of an IT effect has been seen.


Note 22: In other words, increase of real wage brings about an enhancement of effort level. Although there is a limitation in physical power, spiritual activities may produce large discrepancies depending on the degree of efforts. Moreover, spiritual activities are something that cannot be seen by the eyes. It is therefore very difficult to control this process.

Note 23: It is said that many low waged workers are required for the growth of the service industry. However, their existence would eventually produce income discrepancies, and cause a major dilemma.

Note 24: The rationalization and efficiency functions that IT has are superior to its function to create new businesses and new jobs. IT endorses how important changes in business models and the creation of new ones are, rather than merely investing in hardware.

Note 25: The fairest evaluation criteria are based on performances. However, how to estimate performance and how to evaluate it is not so simple. There is a proposal that it would be better to include a “scale of responsibility,” “scope of responsibility,” and “compliancy of job” etc. The overseas expansion of SOHO (small office home office) leads to a related difficult question as to the extent that labor evaluation can be limited to one country.

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