

**Course: Science, Technology and Society**

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**Lecture: 33 (Information Technology and Reconceptualization of Class)**

Now, when such analysis becomes very important, we tend to look at different, we tend to witness a different economy and within that new economy, different economy we tend to witness new classes, which may be different from the conventional Marxist notion of classes, which according to Marx were manifestations of economic differentiation. In this context, what we are going to do? We are going to discuss three important things. One is how Marxist notion of class may be rejected, how Marxist notion of class may be re-asserted and how Marxist notion of class may be re-conceptualized.

there are different ways, what in “The Poverty Of Philosophy”, what , Marx wrote that “a hand will give you a society with a feudal lord, whereas a steam mill with that of the industrial capitalist.” Marx has been wrongly dubbed as a , technological determinist, but it is not correct. Marx was trying to look at hand mill or steam mill, so far as the debates on mode of production are concerned.

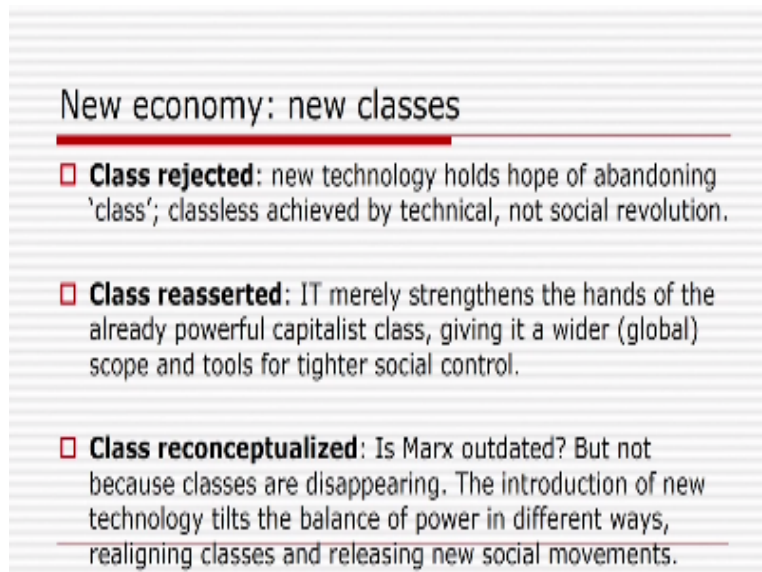
### New economy: new classes?

- ☐ If steam mill gave us a capitalist class (Marx), then what does the computer give us?
- ☐ What does the coming of IT mean for class and power in today's world?

A form of agrarian capitalism preceded the steam mill; capitalism is not limited to industrial production. Then, why capitalism should not continue to help shape the development of new technologies?

Now, what David Lyon tried to do? David Lyon tried to look at, , what kind of new classes, which have surfaced, which have appeared in the context of the information society. If you say that a hand mill gives you a society with a feudal lord, whereas a steam mill with that of the industrial capitalist, then what does the computer give us? What does the coming of IT mean for class and power in today's world? A form of, agrarian capitalism preceded the, steam mill. Capitalism is not limited to industrial production, then why capitalism should not continue to help shape the development of new technologies? This this is a pivotal question for any theory of information society. If I say that a form of agrarian capitalism preceded the steam mill, capitalism is not limited to industrial production, then there is no a priori reason, why capitalism should not continue to , help shape the development of new technologies.

A priori means prior to experience, a posteriori means post experience, prior to experience, prior to empiricism. The, question before us is whether or not information technologies and their associated industrial and social processes actually help change the rules of the game. Daniel Bell offers this as a clear alternative to Marx's equivalent treatment of capital.



**New economy: new classes**

- ❑ **Class rejected:** new technology holds hope of abandoning 'class'; classless achieved by technical, not social revolution.
- ❑ **Class reasserted:** IT merely strengthens the hands of the already powerful capitalist class, giving it a wider (global) scope and tools for tighter social control.
- ❑ **Class reconceptualized:** Is Marx outdated? But not because classes are disappearing. The introduction of new technology tilts the balance of power in different ways, realigning classes and releasing new social movements.

, for the sake of clarity, David Lyon tried to identify three kinds of answers. One, new technology holds hope for abandoning class, classlessness achieved by technical, not social revolution, as the protagonists of IT propound for. As a conceptual causality of change, this is class rejected.

Two, secondly, IT merely strengthens the hand of the already powerful capitalist class, giving it a wider global scope and tools for tighter social control and this is class re-adjusted. Three, thirdly, Marx is now outdated, but not because classes are disappearing. The introduction of new technology tilts the balance of power in different ways, realigning classes and releasing new social movements.

This is class re-conceptualized. Let us discuss these three in detail. First class rejected, many proponents of the information society give the impression that new social relationships appear all around. Old fashioned capitalism and socialism are frequently said to be doomed by the arrival of information technology. , new, not only has the white collar sector dwarfed, the blue collar, which in itself has class implications, but today's industrial and political trends, according to **nice bit**, are leading the advanced societies away from hierarchy and domination to networking and participation. Without disputing claims either that IT could be used in liberating and egalitarian ways or that potentially desirable alterations are occurring within organization and in other social relationships, it seems clear that these kinds of accounts are mistaken when they ignore or minimize questions of class and power.

As is so frequently the case, the supposed technical promise is confused with social reality. IT is not a class corrosive tool. Rather IT widens, IT has widened the class differences, class distinctions and therein lies the significance of component of re-assertion of class, class re-asserted.

Marxist analysis suggests that while information technology does play a significant role within capitalist societies, it does not alter the fundamental relations of production, which lie at their best. As David Albury and Joseph Scourge put it, the so called microprocessor revolution is part of the effort of capital to ensure its continued domination over social and economic development during the period of crisis and change. The myth of technological progress serves to disguise the class interest at work behind the introduction of these machines.

Marxist efforts are dedicated to exposing and countering that class interest. One could say that Marxism is a theory of technological societies. That is what Marxism has been, Marx has been dubbed as a technological determinist. It is wrong. nature is transformed by people using tools. Marx wrote "nature builds no machines, no locomotives, railways, electric telegraphs, self-acting mules, etcetera. These are products of human industry. The power of

knowledge objectified. So, human activity is mediated through technology, but it is class activity.”

Marx is very important. Even today in 2017, it would be possible to write a whole history of the inventions made since 1830 for the sole purpose of providing capital with weapons against working class rewards. We would mention above all the self-acting mule because it opened up a new epoch in the automatic system.

It is the view that new technology is solely bound up with class struggle because it assists in the exploitative accumulation process that characterizes Marxist accounts. The use of machines or manufacture assembly lines, scientific management and now automation and robotics is seen as an ongoing way of perpetuating the interests of capital at the expense of labor. It may eat into new areas, expanding new into consumption, especially the domestic sphere, culture and previously unaffected parts of the globe, but it is essentially the same process at work.

The continuing importance of the legal ownership of capital, whatever the changes in its composition on the one hand and the still considerable strength of the historical working class movement on the other remain the key factors for Marxist analysis. Marxist discussions on IT take these items as read although the internalization of capital via the big global corporations is often described as the monopoly capital stage. The primary rationale for technological change then is to restructure capitalism so that nations and companies may be better placed to compete in the global market place.

In the effort to accomplish this, it is argued unions and the working class in general may expect to be threatened by both by legislation aimed to curb their power and by de-skilling in job losses. The issue of de-skilling you can also look at Harry Braverman's work on de-skilling, technology and capitalist control, “Labor And Monopoly Capital”. It is an epoch making book on de-skilling. The issue of de-skilling has formed a dominant motif within the Marxist debate over information technology. The work of Harry Braverman which focuses on the effects of separating mental from manual labor has been a huge stimulus to the class analysis of automation. Although Braverman's own conclusions are now widely regarded as flawed or something, but one thing one must understand the consequences of that divorce continue to be researched.

Other ways in which the ongoing relevance of class analysis to IT is stressed include the idea of cultural control as well as the elite network of corporations, foundations, universities, policy planning groups and government bodies which seeks to harmonize the interests of capital and filter out challenge to its hegemony. The fact that information technology is poised for a major expansion into the domestic sphere also bodes ill for consumers. It can also be predicted that the new home communication set far from introducing a rich range of fresh entertainment and services more and more spheres of social life.

monopoly capitalism stretches its tentacles into the area of consumption as well as production. To the question what does the computer mean for the social class in today's world? Most Marxist would reply more of the same according to David Lyon. A revolution of the fixed will is an appropriate characterization opined by Robbins and Webster.

So, far from facilitating a new classless situation of open opportunities the smashing of hierarchy and free time IT reinforces the contradictions within capitalism originally identified by Marx. The relentless quest for accumulation pushes capital to penetrate new domains both on a global and on a domestic level as well as tightening the screw of exploitation within the productive work force. Discussion of Marx, IT and class continues to be significant. because the nature of class is perceived to have altered by some who still use Marx as a kind of theoretical springboard and because this also rings bells with others who would not begin with Marxian analysis at all. that is why it is of paramount significance that we must try to reconceptualize Marx's notion of class. the essential two class model of classic Marxism is no longer in the foreground rather , but Marx also pointed out that there will be so many intermediary classes within this two class model of classic Marxism.

let us see how Marx's notion of class can be conceptualized. Having discussed the aspects of class rejected and class re-asserted, now we will discuss class re-conceptualized. Within the post- industrial society according to Daniel Bell, workers in the predominant service sectors, when I say predominant service sectors I mean it may be health, it may be education, it may be research, it may be government sectors and so on.

workers in the predominant services namely health, education, research and government comprise the new intelligentsia and this professional and technical class does the typical work

of information society, planning and forecasting, research and development and so on. War time emergencies stimulated such activities and post war technological and economic planning took them further. The goal according to the objective, the instrumental character of such information technology according to Daniel Bell is to realize a social alchemist's dream, that is the dream of ordering the mass society.

Then we are creating a new kind of intelligentsia here which will order mass society. Like, like Saint Simon, Daniel Bell seemed to survey this technocratic scene without quaff. Why should society not be organized more rationally? Having once referred to a knowledge class, nevertheless Bell now denies both that it is a class on the model of the bourgeois and that it could rule, it could be the owners.

Toffler agrees with Bell in this context. Third wave advocates including the mainstream of intellectuals, information workers and technicians are engaged in a struggle, but it is primarily a struggle for liberation from the second wave existence, that is the industrial society, European modernist paradigm within sociology and only by twisting the term could one call them a class. Other observers are not so sure, knowledge work and some information work may well confer power on those engaged in it.

It appears to us that as those with access to the decision making machinery gain power, so others experience progressive powerlessness. Today's top managers, managers at the top level can have more relevant information readily available at their finger-tips and may well be able to make executive decisions affecting subordinates without consulting them. Is access to and control of significant information replacing property as a new source of class division, this is important.

David Lyon tried to put this debate in context, in perspective. The concept of a new class cannot be separated from wider arguments over social classes and the potential of any one of them to transfer industrial capitalism. Then the concept of new class is inseparable from wider arguments over social classes and the potential of any one of them to transfer industrial capital.

Non Marxist sociologists believe that social change has rendered irrelevant the Marxist account of class and class conflict. This includes the diffusion of capital by shareholding, the

rise of managerial power, the institutionalization of class conflict within industrial relations and the growth of the welfare state. Marxists on the other hand while admitting that social changes can occur insist that their import does not fatally damage Marxist accounts and they are right.

the key problem for our purposes, for our objectives, for our aims, for our goals is that of the so called middle classes. Marx said many intermediary classes, "petty bourgeois." Marxism assumes a polarization of two fundamental conflicting social interests namely labor and capital.

Always there will be a conflict between labor and capital as the two important factors of production, but even Marx recognized the difficulty of placing placing intermediate strata within this. Various revisionists have attempted to cope with this difficulty during the 20th century, but it was in the 1960s that several theories appeared which linked the middle class problem with the new technology. That is fatal, that is wrong attribute.

A number of French sociologists like Maller, Gorge and others claimed that a new working class segment could be observed within high technology production. Higher educational and skills level and more communal patterns of work organization within the new working class enabled them to see more clearly the contradictions inherent within capitalism. Their inferior rewards and their lack of control became more visible. This insight can in fact be traced to Marx who foresaw the progress of technology meant that the human being comes to relate more as a watchman and a regulator of the production process. The implication being that this would also create space for workers to see themselves in this light. Such ideas have been counted in several ways.

However, high tech workers do not necessarily understand the processes in which they are involved. Within a semi- automated chemical plant for example, one study found according to David Lyon pointed it out that one study found that the majority of workers still being unskilled, dirty and arduous donkey work. Big variations of responsibility and skill exist even within apparently homogeneous groups such as technicians.

There may be skilled and unskilled computer workers and whatever the specific circumstances, no clear evidence exists of such a class trying to overthrow capital. For

instance, higher degrees of militancy as Duncan Gallie found when comparing French with British workers relate more to the way they are treated by management. British managers by more frequently seeking consent contain potential strife.

Still debate over the new class continues. if you look at the context of the United States of America, a third force between the capitalist and working class of traditional Marxism that is the professional managerial class which has emerged. the professional managerial class essentially cannot come under proletariat nor can it come under the class of bourgeois.

Many in this professional managerial class for various reasons have anti-capitalist sentiments, but find themselves in a curious position vis-a-vis the working class. They are not able to settle themselves with the bourgeois nor are they able to settle themselves with the proletariat. Both classes confront the capitalist class over the issue of ownership and control of the means of production.

They confront each other over the issues of knowledge, skills, culture and so on. These are also the issues that Abercrombie and Nyori emphasize in a British context. The context was drawn more from the perspective of Weberian economy and society.

Abercrombie and Nyori hinted the power of what they call the service class to affect the future shape of society. However, they distinguish between this class which performs functions relating to capital and dis-skilled white collar workers whose position is closer to the traditional proletariat. Then again this professional managerial class is again divided.

The middle class between bourgeois and the proletariat again is divided. One, which divided into at least two groups, one which performs functions relating to capital and the other includes dis-skilled white collar workers whose position is closer to the traditional proletariat. These discussions bear a strong affinity with the seminal argument in the early 1970s of Alain Touraine.

For Touraine educational credentials are becoming increasingly important for determining one's class position. The division between manual and mental labor which was pointed out by Harry Braverman is the division between the separation of mental labor from manual labor is the basis for a new kind of class conflict. Touraine did not hesitate to isolate technocrats as a



new dominant class whose decision making power is crucial both to maintaining their position and to alienating those denied it.

thus, in the programmed society, in the wired society, in the information society, in the post-industrial society neither forms nor unions are today the chief factors in the struggle for social powers. By the 1980s Touraine would assert that socialism is dead by looking at the events which occurred throughout the world especially in the erstwhile Soviet Union. So, far from the bearer of universal project of human emancipation it is now a mere forum for sectional interests.

So, where is the new opposition now? For Touraine resistance comes from those excluded from participation in the decision making process who find themselves at the mercy of technocrats. They may include trade unionists, feminists, ecologists, members of peace movements, people involved in alternative media and so on. Widespread support for the environmentalist group namely Greenpeace, the alternative plan for socially useful products and drawn up by the aerospace combined or the opposition of computer scientists to the SDI program are examples of the kind of resistance Touraine has in mind.

Of course, counteracting the technocracy is not easy. If you look at the Frankfurt school theorists in Germany, they are also called neo Marxists, they are also called critical theorists like Herbert Marcuse, Jürgen Habermas. They have striven to show modern societies are characterized by a pervasive technocratic consciousness.

That is to say as more and more attempts are made to run society along rational lines space for resistance efforts based on a moral or normative critique becomes more and more restricted. Jack Jacques Ellul once makes a similar point in a different way. restricting one's purview towards only technology excludes questions of purpose, questions of objective, goal, only technology. Then you override the interests of the people at large. As informatization occurs this process is likely to be carried further thus adding urgency and contempt to the relevance to Ellul's critique. Understanding this appears to have galvanized at least some computer professionals and others into a quest for appropriate purposes in a socially informed normative approach.

Normative approach I mean what should be what ought to be, ethical approach. In the hands of Touraine or Habermas the concept of class struggle is taken a long way beyond Marx. For Habermas in particular the increased role of science and technology in the production process undermines Marx's reliance on the labor theory of value.

Now, what is labor theory of value? What is surplus labor? I am not going to teach social theory, but what one should do and let me give you a simple example. Suppose a worker gets 800 rupees to do 8 hours of work and per day. And if that particular worker, if she or he does another 4 hours of work then weigh that such overtime attracts that amounts to say 200 rupees more. Then for 8 hours of work which she or he used to get 800 rupees, then 1 hour of work was equal to 100 rupees. Now, this 4 hours of work is equal to 200 rupees 1 hour of work is equal to 50 rupees. Then instead of 400 rupees he should have he or she should have earned 400 rupees for 4 more hours of work. The story does not end here then one may say that no, surplus labor will be only 200 rupees instead of 1200 rupees. Somebody is getting 1000 rupees. No, now the system is that you are violating the norms of 8 hours day work and then you are trying to extract the labor from that worker in the process of production, in the assembly line production, in large scale production and then when you violate these norms, but your wages should increase. In fact, they do not increase rather they are on decline this is what surplus labor, surplus wage is all about. Then on account of which class conflicts occur at times then trade unionists so many other try to bargain with the management then arises the question of class conflicts class struggles.

Class conflicts no longer have the potential in the way Habermas tried to characterize. That class conflicts no longer have the potential to affect the central structures of society. Nevertheless struggles will go on. In the hope of helping direct social change new movements are appearing according to Touraine which do provide challenges to the status quo, to the powers that be and resistance to the technocratic mentality. But to return to the central question is it appropriate to think of there being a new class which holds power in any effective sense. The conclusion of Goldthorpe is opposite.

Whatever apparent divisions may exist within what he calls the service class overall professional, administrative and managerial personnel and tend to be basically conservative and are unlikely to challenge the wider powers that be wider status quo. It is it is important to understand the relative importance of universities to control their future let alone that of

wider society in the later twentieth century and the early part of the twenty first century. Even today they are in general less central to knowledge production today. Such work is commonly done in in large corporations and government laboratories as well. Universities, in India they have a larger role to play in the production of knowledge, in the dissemination of knowledge that is why university must interact with society.

Universities cannot be at the beckon call of the government. Universities must be able to interact with our economy, culture, polity and so on, society as a whole. Moreover what we witness today is that that involvement within high tech industries does not necessarily confer power on individuals or groups or communities. Information workers may in fact be very routinized, but have little access to decision making process. Knowledge is power one may say that, but it is also misleading slogan, it is also misleading adage that knowledge is power. Knowledge may well be important to the maintenance of power, but that does not mean that the knowledgeable are always powerful. Any ruling elite may use the apparatus of science and technology to buttress their dominant position like US, UK. And Daniel Bell's notion of knowledge elites may even be indispensable to the running of society, but that indispensability does not in itself confer power upon them except in so far as they may be able to limit the activities of their pay masters. Afterall, slaves were indispensable to Athenian life, but had no say in its direction.

While the changing occupational industrial structure does have implications for for class and power none of these seems at present to alter the fundamental shape of capitalist industrial societies, but and here is the rub, capitalist industrialist does not it does not necessarily exhaust the possible ways of describing capturing modern society. The growth of technocratic consciousness and opposition to it is a factor that cannot be ignored especially as the whole process of rationalization is augmented by the introduction of information technology. Information certainly does spell power in another context that of surveillance.

So, new social movements while they might not have the potential to transform society single handedly as Marxian theory requires of class may yet point the way to alternative forms of social organization. This is how we must try to reconceptualize classes according to David Lyon in the context of the information society. Now, having discussed class rejected class re-asserted and class re-conceptualized the cornerstone of the popular information society thesis is that a new information sector comprising new information workers has

become a dominant economic factor in the advanced societies, but the composition of this cornerstone is fatally crumbling.

The evidence points not to an information sector, but to the increase of a diverse range of information activities whose social significance depends on a complex series of variables. Many kinds of work are likely to become information intensive, but this does not add up to a new sector as such. Similarly, mistaken is the notion that the new classes may be accompanying the spread of information technology.

Education and skills levels are becoming a more important criterion for determining social position, but this does not yet at any rate seem to have affected the basic social divisions based on property. Some technocrats may have more power, but do not rule. On the other hand, the simple Marxian view of class polarization is also open to serious question in the context of information technology as David Lyon pointed out.

The matter cannot be left there however. Consider Touraine once more. The value of his alternative view of the programmed society is twofold.

Firstly, Touraine challenges those bland accounts of smooth transition to an information society. Secondly, Touraine dismisses the idea that class struggle is the only axis along which conflicts occur in modern societies. We have discussed that how there are two kinds of information society thesis, each of which makes two kinds of claims.

One popularized view suggests that major social changes for the betterment more causes and open ended views suggest that the information society is problematic. The two images of information society overlap and interrelated and thus both try to anticipate the sorts of social change. We have already discussed the critique of the information society.

## Critique of the information society

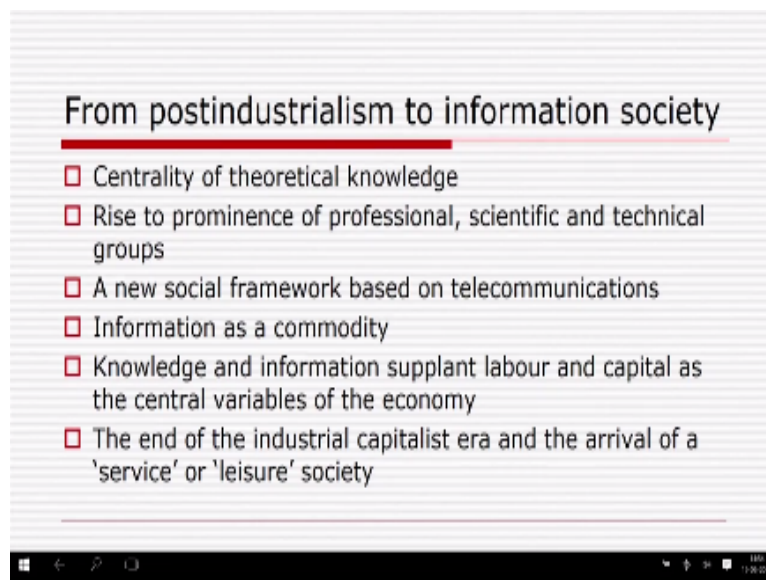
- ❑ **Who wields power:** intellectual and managerial skills are required to exploit information economically, and these are unevenly distributed in society
- ❑ **Inequalities, conflicts, and underlying contradictions:** private gain is constantly set against efforts to 'socialize' production
- ❑ **Dominant ideologies:** the reality of powerful interests and beliefs at work within it; who dare the question the way in which IT is implemented; new technologies are invested with 'sacred' quality (?)

I mean who wields power, how it operates, how it obscures the vested interests, the kind of inequalities, conflicts and underlying contradictions and in terms of dominant ideologies. then very quickly what have we discussed? Very quickly we will see in the information society issues and illusions what we have discussed. We started with Alvin Toffler's three waves.

The first wave is characterized by agricultural society. The second wave is characterized by the industrial society, whereas the third wave is characterized by information society. There are six grounding principles of the third wave according to Toffler, namely standardization, specialization, synchronization, maximization, concentration and centralization.

Standardization is related to the products which are identical in more than one local. Specialization is related to division of labor. Synchronization is related to coordination events to operate a system in unison. Maximization indicates inverse relationship between input and profit. Concentration is related to abundance of a constituent divided by the total volume of a mixture and centralization refers to the process by which the activities of an organization, particularly those regarding planning and decision making become concentrated within a particular location or group keeping all of the important decision making powers within the head office or the center of the organization. From there on we discussed Daniel Bell's characterization of post industrialism.

I mean a post- industrial society is one where knowledge has displaced property as the central preoccupation and the prime source of power and social dynamism. Secondly, technicians and professionals are the preeminent social groups and thirdly service industries are more important than manufacturing industry. Then from post industrialism to information society, social forecasters and social planners and information culture, information being treated as a commodity.



we have discussed this in the context of Bell's reflection on the coming of post- industrial society. centrality of theoretical knowledge rise to prominence of professional scientific and technical groups, a new social framework based on telecommunications, information is being treated as a commodity, knowledge and information supplant labor and capital as the central variables of the economy. If you look at basic economics, you will find that what are the factors of production? there are four factors of production, land, labor, capital and entrepreneur.

and why, we are referring to only labor and capital because land is fixed. Land, labor, capital and entrepreneur, land is a fixed factor of production, labor is a variable factor of production. What earlier economists Smith, Ricardo, Marx, others, they used to subscribe to labor theory of value, for them labor was the most significant aspect because of certain things.

Land is the fixed category, labor is a variable, labor varies, it is not a fixed category and capital is generated by labor and entrepreneur. What is an entrepreneur? It is one more labor. In this sense they used to focus more on labor, but subsequently labor and capital as they are conflict, they have conflicting interests.

## Information technology (IT) and social change

- ☐ IT shortens labour time
- ☐ Diminishes production worker
- ☐ Replaces labour as the source of added value in the national product
- ☐ The way knowledge is created and retrieved
- ☐ Nature of work and occupation

Historically and materially, they were considered the dominant variables of the economy, but, , in the context of information technology, knowledge and information have displaced labor and capital as the central variables of the economy. And then we witness the end of the industrial capitalist era and the arrival of a service or leisure society and there in , what kind of functions that IT performs, that IT shortens labor time, diminishes labor time, it diminishes production worker. Then IT shortens labor time, IT diminishes production worker, IT replaces labor as a source of added value in the national product.

## Themes of information society: Information workers in an information society

Possession of qualifications in microelectronics, computing system analysis, telecommunications, operational research, software design, fibre optics, expert systems and so on

- ☐ What does this proliferation of new job description means?
- ☐ Who are these 'information operatives'? (Tom Stonier)
- ☐ What contributions do their activities make to the pattern of social relationship?

The way knowledge is created and retrieved, knowledge is being treated as a commodity and the nature of work and occupation has also been subject to changes. Then in the themes of information society, we have discussed information workers in an information economy, political and global aspects and then an information culture.

### Themes of information society: Information workers in an information society

- ☐ What are the parameters which explain 'information'?
- ☐ What is the purpose, function, or content of the information?
- ☐ What is the relationship between information, knowledge and power with regard to the social significance of research and development?
- ☐ And, who makes decisions, on what basis, or with what effect?

Within information workers in, in an information economy, we have discussed, we have posed these questions, what does this proliferation of new job description mean, who are these information operatives, what contributions do their activities make to the pattern of social relationship, what are the parameters through which information may be explained, what is the purpose, function or content of information, what is the relationship between information knowledge and power with regard to the social significance of research and development and who makes decisions and on what basis or with what effect.



## Themes of information society: Political and global aspects

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- Political choice and participation
    - Instant referendum
    - More informed-decision making
  - Accessibility and surveillance
    - More secure society
    - Or, The threat of an Orwellian society?
  - Relocation of workers and technology-transfer
    - 'North-South' divide
    - Second silicon revolution
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In political and global aspects, we have discussed three parameters, one is on the basis of political choice and participation, secondly accessibility and surveillance and thirdly relocation of workers and technology transfer. Within political choice and participation, we have discussed instant referendum and more informed decision making and within accessibility and surveillance, we have discussed more secure society or the threat of an Orwellian society, I mean, the one which, which we have discussed, does the widespread political and administrative use of extensive databases, which allow for the easy storage, retrieval and transmission of personal information, portend of future fraud with the dangers of electronic eavesdropping, On the one hand, police defense, social security and other personnel reassure the public that no innocent person need have any worries about improper prying into their private lives.

## Themes of information society: An information culture

- Transition from Science-based 'welfare' state to science-based 'warfare' state
- A new kind of modernity
  - A break with the past
  - Altered aesthetic perceptions of time and space
  - New economic dependencies and new social interactions
  - New functional and quantitative way of thinking

On the other, cases of wrongful dismissal or arrest, which are traced to erroneous computer files serve to dwell fears that in fact, ordinary citizens may well be at risk. Within relocation of workers and technology transfer, we have discussed north south divide, we have discussed digital divide and so on. And in information culture, we have discussed how there has been a transition from science based welfare state to a science based warfare state, thereby we witness a new kind of modernity, a break with the past, altered aesthetic perceptions of time and space, new economic dependencies and new social interactions, new social relationships and so on, and new functional and quantitative way of thinking and so on.

## New economy: new classes?

- If steam mill gave us a capitalist class (Marx), then what does the computer give us?
- What does the coming of IT mean for class and power in today's world?

A form of agrarian capitalism preceded the steam mill; capitalism is not limited to industrial production. Then, why capitalism should not continue to help shape the development of new technologies?

Then we have discussed there are three factors, which influence in information technology namely the military factor, the commercial factor and the government factor. In the new economy, new classes, we started with what Marx wrote in the Poverty Of Philosophy that a

hand mill gives you a society with a feudal lord, and the steam mill with that of the industrial capitalist, and then what does computer give us, what does the coming of IT mean for class and power in today's world. A form of agrarian capitalism preceded the steam mill capitalism is not limited to only industrial production, then why capitalism should not continue to help set the development of new technologies?

### Critique of the information society

There are two kind of information society thesis, each of which makes two kinds of claims:

- ❑ Popularized view: major social changes for the betterment
- ❑ More cautious and open-ended views: the information society as problematic

The two images of information society overlap and interrelated, thus both try to anticipate the *sorts of social change*

In this context, we have discussed how the emergence of information technology has rejected, reasserted and re conceptualized Marx's notion of class for according to Marx classes are manifestations of economic differentiation, but still economic differentiation has not yet been able to polarize classes on this basis. And then we try to bring about a critique of the information society that is a popularized view, which suggests that major social changes for the betterment of the society, more popularized view that is the states view that is the corporate sectors view, but more cautious and open ended views which social scientists, scholars of social sciences, students of social sciences, they espouse that the information society as problematic. And these two images, these two views that popularized view as well as the more cautious and open ended views overlap and interrelated, thus both try to anticipate the sorts of social change.

## Critique of the information society

- ❑ **Who wields power:** intellectual and managerial skills are required to exploit information economically, and these are unevenly distributed in society
- ❑ **Inequalities, conflicts, and underlying contradictions:** private gain is constantly set against efforts to 'socialize' production
- ❑ **Dominant ideologies:** the reality of powerful interests and beliefs at work within it; who dare the question the way in which IT is implemented; new technologies are invested with 'sacred' quality (?)

And as a part of the critique of the information society, it may be three fold that who wields power that is the question? intellectual and managerial skills are required to exploit information economically and these are unevenly distributed in society. Inequalities, conflicts and underlying contradictions, private gain is constantly set against efforts to socialize production, I mean, there have been attempts to nationalize loss and privatize profits. And the dominant ideologies that we encounter, that the reality of powerful interests and beliefs at work are at work within it, who dare the question the way in which IT is implemented, new technologies are invested with sacred quality, what is that sacred quality that that also is a part of dominant ideology.

## Reception of modern science in colonial India

The native intellectuals had two options before them:

- ❑ The first option was to convince themselves that the best products of modern science were already anticipated by what they considered to be the national philosophy of India, namely the *Vedanta*. It is this concern which has been expressed in the works of Vivekananda, Aurobindo and many others.
- ❑ The second option was to build an indigenous tradition of modern science by establishing scientific institutions for pedagogy and research.

In this sense, we try to cover the information society and then we will get into reception of modern science in India as a part of the exercise. And then we will discuss science policies in India, but first we will discuss reception of modern science in India and then we will move on to science policies in India. In reception of modern science in India, we will start with the process of democratization of scientific knowledge, the Indian context, institutionalization of modern science in colonial India, then policies of colonial rulers and limitations.

Then science was democratized in Indian context through building scientific institutions, the native intellectuals during the colonial period in the late 18th century and early 19th century, they had two options before them, when modern science was introduced, was implanted in Indian soil. The first option was to convince themselves that the best products of modern science were already anticipated by what they considered to be the national philosophy of India, namely the Vedanta. It is this concern which has been expressed in the works of Vivekananda, Aurobindo and many others.

For western world, it was at best ethno philosophical in nature, at best. And the second option was to build an indigenous tradition of modern science by establishing scientific institutions for pedagogy and research. And this second option is sociologically significant and in this context as a part of process of not merely popularizing, but also democratizing scientific knowledge in India, scientific institutions were built by the native intellectuals in the second half of the 19th century.

### Building scientific institutions in nineteenth century India

- ❑ The second option is sociologically significant. In this context, as a part of the process of not merely popularizing but also democratizing scientific knowledge in India, scientific institutions were established by the native intellectuals in the second half of the nineteenth century.
- ❑ Hindu College (1816)
- ❑ Delhi College (1825)
- ❑ The Aligarh Scientific Society (1864)
- ❑ The Bihar Scientific Society (1868)
- ❑ The Indian Association for the Cultivation of Science (1876)



## Scientific Policy Resolution 1958

### Preamble

- Characteristic of the present world that the progress towards the practical realisation of a welfare state differs widely from country to country in direct relation to the extent of industrialisation and the effort and resources applied in the pursuit of science.
- Science has developed at an ever-increasing pace since the beginning of the century, so that the gap between the advanced and backward countries has widened more and more. It is only by adopting the most vigorous measures and by putting forward our utmost effort into the development of science that we can bridge the gap.

In this section, we will discuss the Hindu college, the Delhi college, the Aligarh scientific society, the Bihar scientific society and the Indian association for the cultivation of science. And from there on, we will move on to the scientific policy resolution.

## The process of democratization of scientific knowledge: the Indian context

- Democratization of scientific knowledge involves an attempt to critically focus on who benefits and loses under specific regimes of knowledge production and consumption in specific social contexts.
- Equality of opportunities to do science and the degree of access to do science, equality of opportunities to evaluate any knowledge form, the degree of access to scientific knowledge for application and the freedom to dissent constitute democratic norms.

In the next lecture, we are going to start with the reception of modern science in India.

Thank you.