Course: Science, Technology and Society

Professor: Sambit Mallick

Department: Humanities and Social Sciences

Institute: IIT Guwahati

Week: 11 (Information Society)

Lecture: 31 (Alvin Toffler and Daniel Bell)

Now, coming to our discussion on the information society, we will start with Alvin Toffler. look at whenever we will be using information society, we will be using information society, post- industrial society, wired society interchangeably, does not imply that they do not have differences. We can also make a point of reference that we have made a shift from post-industrial society to information society, but for the time being we do not want to make such distinctions.

We do not want to use these terms interchangeably to make sense of what is constitutive or what constitutes the information society. Alvin Toffler, he wrote many books in fact, he wrote "Future Shock", he wrote "Third Wave" and so on. Alvin Toffler, characterized the development of society in three phases, or three waves, the first wave, the second wave and the third wave.

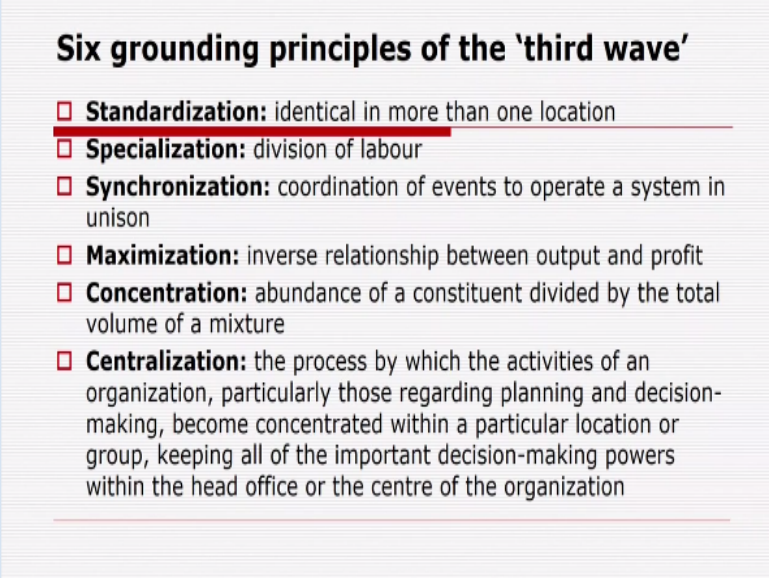
The first wave is characterized by the agricultural society, the second wave is characterized by the industrial society and the third wave is characterized by the information society. I what kind of transition which has taken place in the in the development of society, it also it also marks the changes in the modes of production. Suppose, if you look at Marx's notion of mode of production, first there was primitive communist society or primable communal society and I am trying not to use primitive communist society precisely because "primitive", this concept, this term itself is a colonial construct.

I will say hunting and gathering economy, then we saw slave society, feudal society where agriculture was very dominant, then we saw, that is the first wave. In the second wave, we saw capitalist society with industrial, industrialism was very dominant. Again in capitalism, in the advanced stage of capitalism, we find information society or post- industrial society.

James Martin, , coined the term wired society, to connote information society or post-industrial society. Then, what is this? You know agricultural society, you know industrial society, you know, but what is so significant about agricultural society? Now, the mode of production will be hovering around agriculture. In industrial society, agriculture will be replaced by more and more machines, industries and the mode of production will be hovering around only industries.

Even agriculture has to be industrialized. The same bullock cart system cannot go on in an industrial society. Agriculture also requires to be industrialized, but unfortunately in India, agriculture has been corporatized by the introduction of seed companies, but if you look at the scenario of agriculture in India, it also requires industrialization.

Then, in the advanced stages of capitalism, what we find is that post- industrial society information society, the mode of production has changed further and computer was the biggest invention of this stage. In the stage of post- industrial society or information society or wired society. Now, , for Toffler, what are the six grounding principles of the third wave concept? Toffler's third wave concept is based on six grounding principles, . six grounding principles.



One standardization, secondly specialization, thirdly synchronization, fourthly maximization, fifthly concentration and sixthly centralization. What is then this standardization refers to? standardization refers to the products which will be identical in more than one location in the context of the information society, in the context of the post- industrial society, our products

need to be standardized. What do we mean by specialization? Specialization is related to division of labor.

Now, to produce a single laptop, we need specialists to do this. Not a single individual can produce a laptop like this. We need a variety of specialists to prepare a laptop.

Now, somebody can say that no, no, we can reassemble the parts and do that, but it goes beyond. it violates copyright. That is another thing we will discuss. What is synchronization? it refers to the coordination of events to operate a system in unison.

You must have seen the railway time table. They are synchronized, they have been coordinated in such a manner that they can operate in unison. If timings will not be synchronized in the context of trains, railways, then you will find that in one, in a single platform, there will be 4, 5 trains who will be waiting.

It should not happen. It does not happen that the timings have been synchronized. What does maximization refer to? I mean inverse relationship between output and profit. Then, I want to maximize my output. Then, what does maximization refer to? It is an inverse relationship between input and profit. Then, I must maximize my profit with minimum level of input.

Then, what does concentration refer to? It is abundance of a constituent divided by the total volume of a mixture. What does centralization refer to? It is 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. If you look at a software company, you will find almost all six principles in place.

The information society, this third wave concept has its roots in the literature of post-industrialism. When we talk about post industrialism, Daniel Bell assumes greater significance. In 1973, he wrote “The Coming Of Post- Industrial Society.”

What is post industrialism in general? It is a popular social science notion of the 1960s and 1970s, which heralded the end of the industrial capitalist era and the arrival of service or leisure society. That is why in the last lecture, we discussed the collapse of the dreams of modernity.

The collapse of the dreams of modernity, I mean European modernity, that is why we come to a point of post- industrial or information society, that capitalist modernity, that industrial modernity.

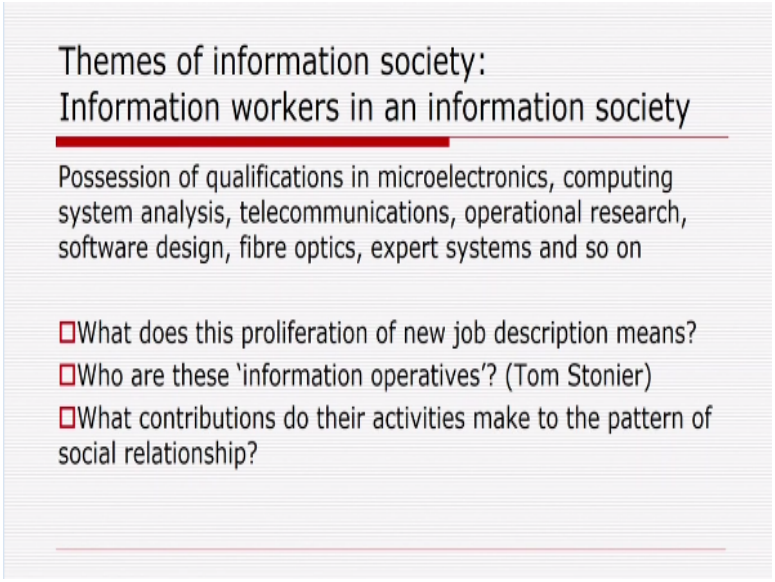
Then, what is a post- industrial society? A post- industrial society according to Daniel Bell, is one where knowledge has displaced property as the central preoccupation, and the prime source of power and social dynamism. Number one, number two, technicians and professionals are the preeminent social groups. Number three, service industries are more important than manufacturing.

Then, I repeat a post- industrial society is one where knowledge has displaced property as the central preoccupation and the prime source of power and social dynamism. See, earlier notion was that property, especially land was the main source of power. Even today you may find that, but it is on the wane, it is on decline.

Knowledge has essentially displaced property as the central preoccupation and the prime source of power and social dynamics. Knowledge has been equated with power, that is why Michel Foucault in 1980 wrote power knowledge in 70s or 80s, he wrote power knowledge distinction, I mean knowledge is power. Then, who were the earlier, preeminent social groups? Earlier land owners, feudal rulers, then capitalists industrial manufacturing class were the preeminent social groups.

Now, technicians and professionals, they have become preeminent social groups. Thirdly, manufacturing has given way to service industries. Service industries have become more important than manufacturing industries.

In this sense, Daniel Bell used the term post- industrial society. Then, what we are going to do now, that from post industrialism to information society in the context of Bell. Then, we will discuss the relationship between IT and social change before discussing themes of information society.



Now, what we are going to do from post- industrial society, from post industrialism to information society, the roots of the information society idea are intertwined in a complex manner. It is hard to disentangle the diverse trends of attempted social prediction, government policy, futuristic speculation and empirical social analysis. You will find that it depends upon social scientific concepts as the information economy indulges briefly in quoted predictions.

when I use the term prediction, I use it in a more scientific sense. If I say that in 1951, the production of rice was x quintal in India. Then, in 1961, then x plus 1 quintal and in 1971, x plus 2 quintal. If this is the trend of production of rice, then in 2021, what will be the production of rice? If the amount of rainfall is x unit in 1981, x plus 1 or x minus 1 unit in 1991, x minus 2 units in 2001, then what will be the amount of rainfall in India in 2051? In this sense, we are using prediction, not in an astrological sense. Then, what kind of thing that we want to see in the context of such transformation from post- industrial society to information society? Bell

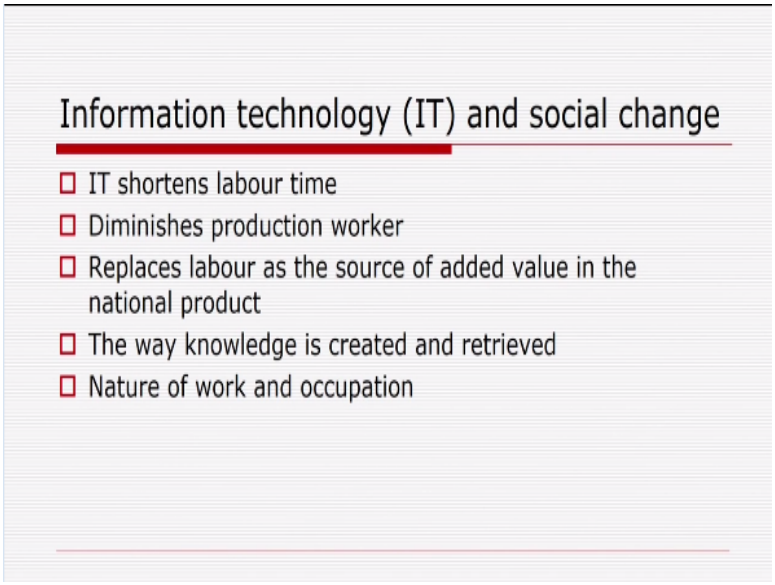
argues that the information society is developing. In fact, in the context of post industrialism, one readily identifiable trend on which hopeful accounts of information society often rely is the idea of post industrialism, especially the version associated with Daniel Bell.

This is the view that just agrarian society was replaced by industrial society as the dominant economic emphasis shifted from the land to manufacturing. So, post- industrial society develops as a result of the economic tilt towards the provision of services. The increased part played by science in the productive process, the rise to prominence of professional scientific and technical groups plus the introduction of what is now called information technology all bear witness to a new axial principle.

What is that? what is that principle which is at the core of the economy and society? This axial principle, the energizing principle that is the logic for all the others is the centrality of theoretical knowledge. Bell argues that the information society is developing in the context of post industrialism. He forecasts the growth of a new social framework based on telecommunications which may be decisive for the way economic and social changes are conducted, the way knowledge is created and retrieved and the character of work and occupations in which individuals are engaged.

The computer plays a pivotal role in this revolution. Bell also sketches other significant features of the information society. There may be, rise to prominence of professional scientific and technical groups, a new social framework based on telecommunications, information is treated

as a commodity, knowledge and information supplant labor and capital as the central variables of the economy, the end of the industrial capitalist era and the arrival of a service or leisure society.



Then how IT shortens labor time, diminishes production workers, IT replaces labor as the source of added value in the national product, the way knowledge is created and retrieved, nature of work and occupation, , we will discuss in detail this. , Bell tried to sketch significant features of the information society, IT by shortening labor time and diminishing the production worker actually replaces labor as a source of added value in the national product. Knowledge and information supplant labor and capital as the central variables of the economy, he comments on the way that information is being treated as a commodity with a price tag on it and how the possession of information increasingly confers power on its owner.

That is why knowledge is power, information is power because it is subject to commodification. They have been, information and knowledge have been commodified to such an extent that they have become powerful weapons. Bell recognizes some of the ambiguities though involved in identifying the service sector and proposes that economic sectors be divided into at least three activities.

One extractive activities, secondly fabrication activities and thirdly information activities and this way Bell claims that one may monitor the penetration of information activities into more traditional ways of agriculture manufacturing and services. That is why I said even agriculture requires industrialization. We cannot go on with same bullock cart system for all time to come,

but what kind of industrialization, who will own the process of industrialization? The state which has been the sole sponsor of such research, scientific research till the late 1980s and early 1990s has withdrawn itself from such basic responsibilities since 1990s.

Bell underlines ways in which these areas are expanding in the wake of information technology development. He forces major social changes resulting from the establishment of new telecommunications infrastructure. Such huge changes will occur as the merging technologies of telephone, computer, cable television and video discs lead to vast reorganization in the modes of communication between persons, the transmission of data, the reduction if not the elimination of paper in transactions and exchanges.

That is why we all say that environment friendly, paper free society because it affects the bamboo biodiversity conservation adversely. New modes of transmitting news, entertainment and knowledge and so on. These in turn will intensify concern about population distribution, national planning, centralization, privacy surveillance and so on.

For Bell the faithful question or one might say the consumerist question is whether the promise will be realized that instrumental technology is open the way to alternative modes of achieving individuality and variety within a vastly increased output of goods. What is that instrumental technology? We have discussed this in the context of Weber's typology of action, social action. There are four types of social action which Weber offered. Traditional social action, effective or emotive social action, value rational social action and goal rational social action.

An instrumental technology comes under this goal rational social action. I mean it must have an objective, it must be instrumental in nature. That objective, it must have a clear object.

Bell asks many of the right questions. I mean indicates worthwhile lines of inquiry. This is why Bell's work deserves to be taken seriously.

Bell's attempt to find a thorough going alternative to Marxian class analysis underestimates both the resilience of some familiar features of modern societies and the extent to which new conflicts and new struggles could arise within this information society. See Marx's notion of classes was based on manifestations of economic differences. Now, Bell tries to examine this.

We will discuss this in the lectures to follow how such notion has to be rejected, such notion has to be reasserted and such notion has to be reconceptualized. In the context of the information society, post industrial society and so on. We will come to this point, but staying on with the transition from post industrial society to information society, the familiar features include military, commercial and government power.

These are the factors which impact, which influence IT. If you look at the production of atom bombs during the second world war, this was also a technology which was demanded or which was created in the context of the war, militant. No small significance lies in the fact that it was military requirements which gave birth to modern computers also.

The massive mainframe, I mean ENI, IAC built in 1946 in the electrical engineering department of the university of Pennsylvania was intended to assist the aiming of guns and was soon involved in calculations for the atom bomb. Neither is it irrelevant to note that huge forces of international capitalist commerce are today locked in mortal combat to capture markets and conquer opposition within the lucrative high technology field. Nor is it an accident that governments are so active in promoting IT and purchasing its products.

IT is a powerful tool for monitoring and supervising people's activities. In other words, one does not have to look far before this question comes to mind. Does IT bring about a new society without precedent or does it rather help to intensify certain processes in today's society of which we are all too aware? What of new conflicts and struggles? Are we entering an era not of Bell's rather smoothly harmonious information society, but of new social frictions and power alignments within a divide and control and contradictory information society? This is what David Lyon tried to pose that around the same time as Bell's work on post industrialism, a European contribution appeared which took account of the same social and economic trends.

Lyon tried to attribute this concept of, this question of Bell to Alain Touraine's , western Marxist work. Touraine study took a quite different tack from Bell's. He challenged the bland post industrial assumption that class struggle was a thing of the past.

Although he argued that many class images are too bound up with the era of capitalist industrialization. He invited readers to consider the fundamental importance of class situations, conflicts and movements in the programmed society, I mean wired society, programmed

society, information society, post industrial society,, we are using them interchangeably. In particular, he had in mind a major cleavage between technocrats and a more disparate grounding whose livelihood and lifestyles are governed by them.

Property ownership is less a bone of contention than the opposition brought about because the dominant classes dispose of knowledge and control information. So, do, so do changing technologies and shifts in educational qualification and skill lead to novel class alignments? This one, class rejected, class re-asserted and class re-conceptualized, we will discuss in the lectures to follow. The analysis of Touraine and others hint at wider movements of power and whether class rejected, class re-asserted and class re-conceptualized, these concentrate upon the workplace and on production.

The use of IT within governments, education, the media and the domestic sphere as well as in the workplace means that more and more social relationships are mediated by machines. What does this imply for power? Mark Poster suggests that because new forms of social interaction based on electronic communications devices are replacing older types of social relations, we should ask of, we should speak of a new mode of information. He too is questioning the relevance today of some Marxian assumptions, but for different reasons from Daniel Bells, but, t Alain Touraine, Daniel, David Lyon, they, aretrying to strike a critical balance.

From, from post industrial society to information society, we can look at social forecasters and social planners and the information society as problematic. the way James Martin talked about the wired society. What does it mean? What is that wired society? Wired society, , social forecasting, social planning, when you do, it is the non-polluting, non-destructive quality of IT as a major point, point in its favor.

Even Tom Stoney said that living in a post industrial world means that not only are we more affluent, more resourceful and less likely to go to war, but also more likely to democratize. Now, now, these are very important dimensions again in the, in favor of IT. That is why from the very beginning, we, suggested that no, do not look at a one way relationship between science, technology and society, but, but try to look at both science and technology as a part of society, as reflected in the embedded model.

New communications technologies hold out the next promise, the demise of war. As Tom Stoney has said, you know, we may, there is a greater likelihood that we will not go ahead with war. But, , these things are changing. even if you do not go ahead with war, but you create a fear as if a war is coming, as if a war is on the way.

In this sense, we are using. Now, now, the kind, the way, we look at this, social forecasting and social planning, we must do it in a futuristic sense. Now, when we look at the information societyas a problematic, what are the prospects for the information society concept? The answer is not straight forward.

For one thing, more than one image of the information society is available. The popular image of a social transformation along with third wave lines is not the same as the fuzzier image produced within more careful social analysis of societies coming to terms with a range of more or less, more and less profound political, economic and cultural effects of information technology. you may look at these things in an interesting manner.

There, may be two features which we may look at of the information society problematic. One is that social analysis must grapple with the ramifications of the fusion of technologies which comprise IT, information technology. Then, I repeat, social analysis must grapple with the ramifications of the fusion of technologies which comprise IT.

And the other noteworthy feature is that as social analysis exposes alternative options in the adoption of new technology that are in fact available to government, industry and the public, discussions of, of the strategy for shaping new technologies become more relevant. Do government sponsored slogans such as automate or liquidate represent genuine choices? Is it data or persons that ought to be protected by law? It is important. government, government, industry, corporate sectors, they always opine that no, you have to automate or you have to liquidate.

“No, no, data have to be protected.” but what do we really want? As a social scientist, as a student of social sciences, I must pose this question that, either automate or liquidate, does it provide or,, are we entangled by only these two crude choices? Is there no other choice? If I, if we do not automate, then we will definitely liquidate. There is no other option. Who are more

important, whether data or persons? From the data we have got medicines which must cure the people.

Now, we are trying to protect the data by increasing the prices of medicines in such a manner that the people at large will be at stake. They will be , they cannot access medicine. how does one decide what counts as an appropriate technology when microelectronics is concerned? Social analysis can serve to indicate the conditions under which ethical considerations and social hopes might be realized.

That is why social analysis is very important when we try to grapple with IT.