Course: Science, Technology and Society

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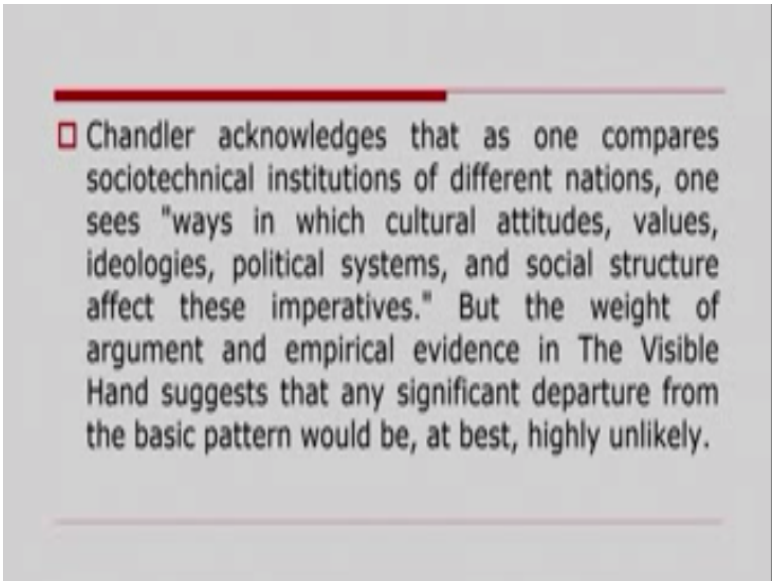
Week: 08 (Social Shaping of Technology I)

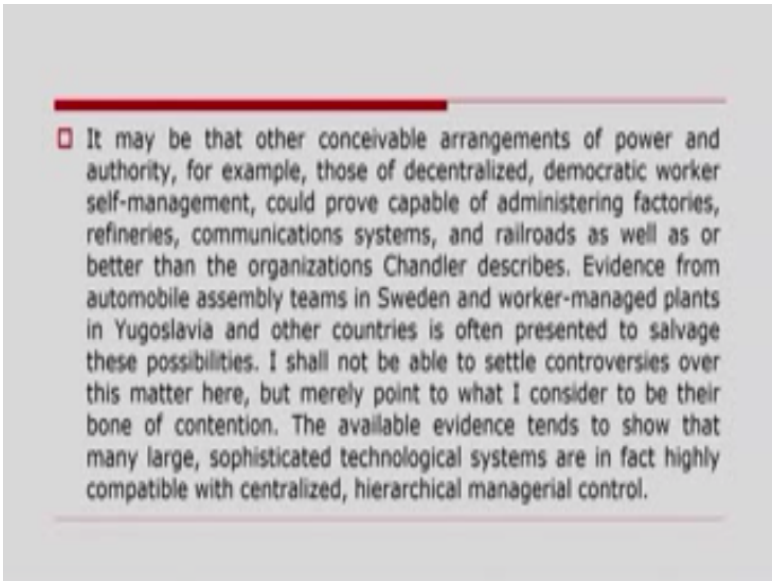
Lecture: 24 (Langdon Winner III)

Staying on with the earlier lecture, that how Chandler acknowledges that one compares socio-technical institutions of different nations, , one looks at the ways in which cultural attitudes, one, values, two, ideologies, three, political systems, four, social structures, five, and so on. Many, many, many more things can come up, cultural imperatives, and so on. How they affect such imperatives? But the weight of argument and empirical evidence in "The Visible Hand", which Chandler wrote a long back, that which suggests that any significant departure from the basic pattern would be at best highly unlikely.



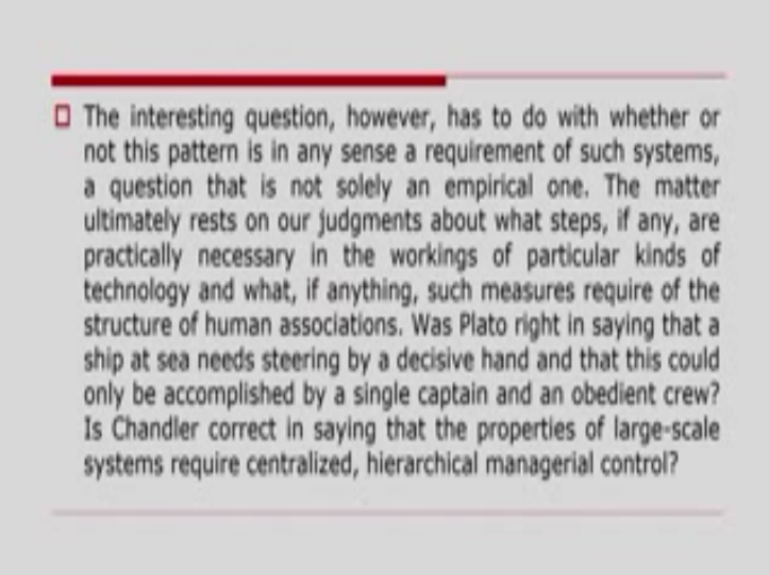
I think we stopped here, and now we are going to complete this portion in the in the present lecture, that it may be that other conceivable arrangements of power and authority, which are very much embedded in the design and control of a technology. For example, those of decentralized or democratic worker self-management could prove capable of administering factories, refineries, communication systems, and railroads, as well as, or better than the organizations, which Chandler described. Evidence from automobile assembly teams in

Sweden, and worker managed plants in Yugoslavia, and other countries is often presented to salvage these possibilities.



What in technology and politics, or “Do Artifacts Have Politics?”, what Langdon Winner tried to do, , perhaps, he was, his intention, his purpose was not to settle controversies over this matter here, but merely point to what he considered to be their bone of contention. The available evidence tends to show that many large sophisticated technological systems are, in fact, highly compatible with centralized hierarchical managerial control. When we talk about centralization, when we talk about hierarchy, it is very much, I mean, it very much involves the elements of politics.

That is how we talk about the political control of technological systems in this context. Now, what we are trying to do in the, in the context of such, embeddedness of politics or embeddedness of the elements of politics in the design and control of a specific technology, such questions have to do with whether or not the pattern is in any sense a requirement of such systems, a question that is not solely an empirical one. The matter ultimately rests on our judgments about what steps, if any, are practically necessary in the workings of particular kinds of technology and what, if anything, such measures require of the structure of human associations.



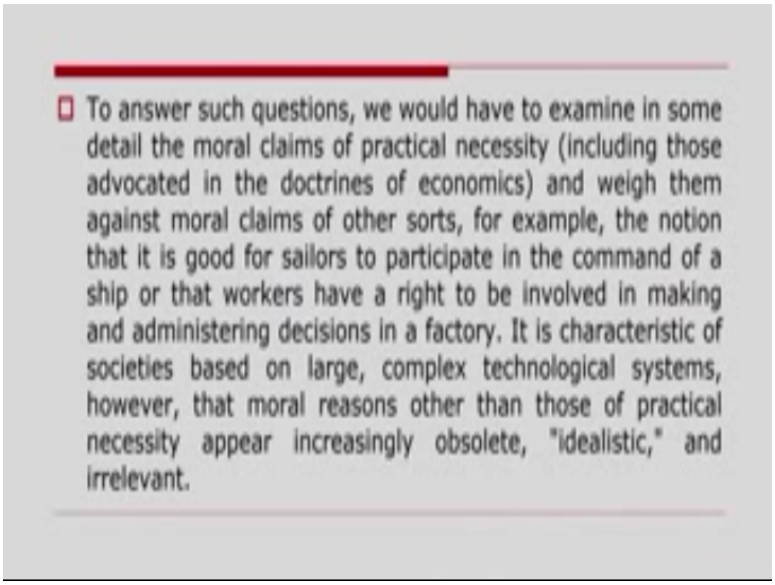
It is very important to understand this, that the interesting question, however, is, has to do with whether or not such pattern of the, politically and culturally and economically embeddedness, political embeddedness of technology is in any sense a requirement of such systems, a question that is not solely an empirical one. The matter ultimately rests on our judgments. Then, we slowly deviate from the fact value dichotomy to the similarity or to, to the, the porousness, the opaqueness of, of opaqueness between or the porousness between facts and value.

In positivism, we have studied that there must be a dichotomy between fact and value, but here the distinction between fact and value is not rigid, but porous. This is a constructivist argument and , it goes beyond positivism. It is an anti-positivistic construal of science and, and technology.

This is very important, that, that when we talk about judgments, we must talk about judgments of what kind. Whenever we make judgments, we not only talk about facts, but also about value. That is why I repeat the matter ultimately rests on our judgments about number one, what steps which are practically necessary in the workings of particular kinds of technology and number two, , what are such measures which are required of the structure of human associations.

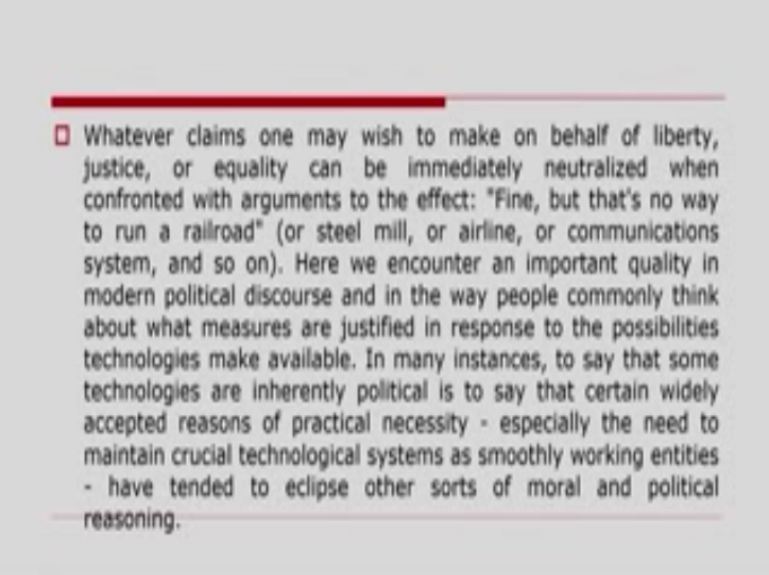
Let me, let me go back. I mean I am, I am trying to dwell upon Langdon Winner's reflection on the political construal of technological systems. , let me go back.

, was Plato right in saying that a ship at sea needs steering by a decisive hand, and , , that this could only be accomplished by a single captain and an obedient crew? Is Chandler correct in saying that the properties of large scale systems require centralized hierarchical managerial control? Was Engels right when he tried to reflect on, on authority?



To answer such questions, we would have to examine in some detail the moral claims of practical necessity including those advocated in the doctrines of economics and weigh them against moral claims of other sorts. For example, the notion that it is good for sellers to participate in the command of a ship or that workers have a right to be involved in making and administering decisions in a factory. It is characteristic of societies based on large complex technological systems.

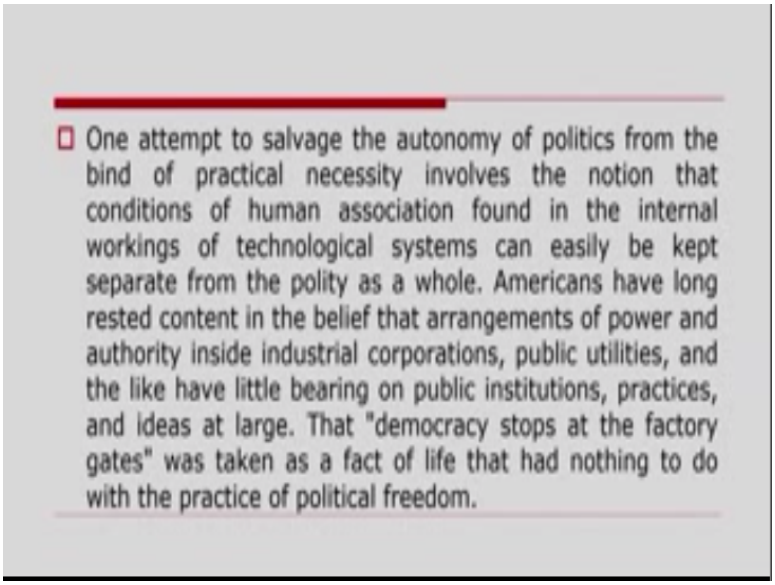
However, that moral reasons other than those of practical necessity appear increasingly obsolete, idealistic and irrelevant. If they appear, it is a reified position.



Then, whatever claims one wish to make on behalf of liberty, justice or equality in the context of the political construal of technological systems can be immediately neutralized when confronted with arguments to the effect.

That is fine, but that is no way to run a railroad or steam mill or airline or communication system and so on. Then such questions assume greater significance against the backdrop of even the questions of liberty, justice or equality. Here, we encounter an important quality in modern political discourse and in the way people commonly think about what measures are justified in response to the possibilities which technologies make available.

In many cases, in many examples, in many instances to say that some technologies are inherently political is to say that certain widely accepted reasons of practical necessity, especially the need to maintain crucial technological systems as smoothly working entities have tended to eclipse other sorts of moral and political reasoning. Then, the questions of liberty, the questions of justice, the question of equality, the question of moral reasoning, the question of political reasoning, they tend to disappear in the context of the way technologies are developed, the way technologies are practiced.

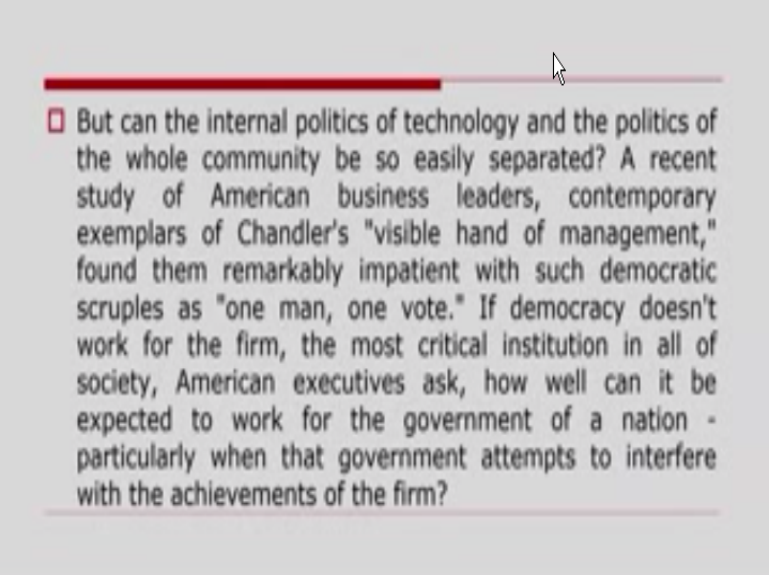


One attempt to salvage the autonomy of politics from the bind of practical necessity involves the notion that conditions of human association found in the internal workings of technological systems can easily be kept separately from the polity as a whole.

Earlier, we have discussed this, I mean somebody may say that no, technology is merely a technique, there is no question of public policy, there is no question of politics, there is no question of economics, there is no question of culture, there is no question of society on the whole, there is no question of market. Can you think of a technology which does not take market into account or consideration? Then, economics the the field of economics, the field of market, the field of commerce, the field of culture, the field of public policy, they assume greater significance when we talk about the relationship between technology and politics or when we talk about the design and control of a technological system. Perhaps you will find that Americans have long rested content in the belief that arrangements of power and authority inside industrial corporations, public utilities and so on have little bearing on public institutions, practices and ideas at large.

That democracy stops at the factory gates was taken at as a as a fact of life that had nothing to do with the practice of political freedom, but but the central question which assumes greater significance that that when we talk about a specific technology, we must discuss democracy, we must discuss liberty, we must discuss equality, we must discuss justice, we must discuss equality political freedom, we must discuss moral and political reason. Because technology

cannot be examined in isolation, that is what we are going to do in the lectures to follow, how technology as as a form of knowledge, as a form of practice by by Edwin T. Layton junior, but let us first complete this component of the course, but the question is that can the internal politics of of technology and the politics of the whole community be easily separated? A recent study of American business leaders component contemporary exemplars of Chandler's Visible Hand of management found them remarkably impatient with such democratic scruples as one man one vote.

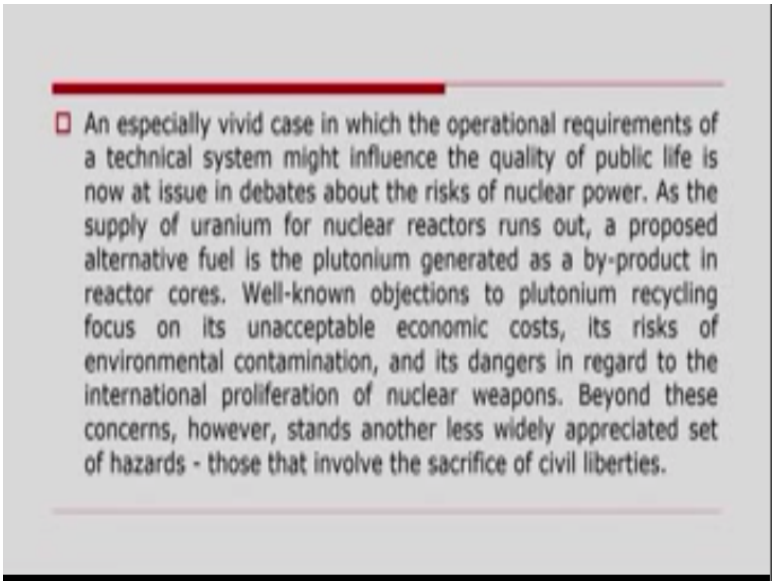


If democracy does not work for the firm the most critical institution in all of society American executives ask how well can it be expected to work for the government or of a nation. Particularly, when that government attempts to interfere with the achievements of the firm? Then if I say that a particular dam is remarkably useful for the nation at the cost of the indigenous population. Let us take the example of the north east, if I say the design of a dam, Subansiri dam, is remarkably useful for the nation, then t how can I leave the aspirations the life and living of the indigenous communities, who have been displaced who have not yet been rehabilitated, who have been dislocated from their homeland, who have been dislocated from their essence of life and living.

This is very important to remember that if democracy does not work for one particular firm, one particular community, one particular group, one particular social group, then how well can it be expected to work for the government of a nation. Particularly, when that government attempts to interfere with the achievements of those communities, those social groups, those

marginalized communities, that political institution, that is the state must take into consideration of the interests of these groups, these institutions, this this institutional framework as such. if you look at certain things many may observe that patterns of authority that work effectively in the corporation become for businessmen the desirable model against which to compare political and economic relationships in the rest of society.

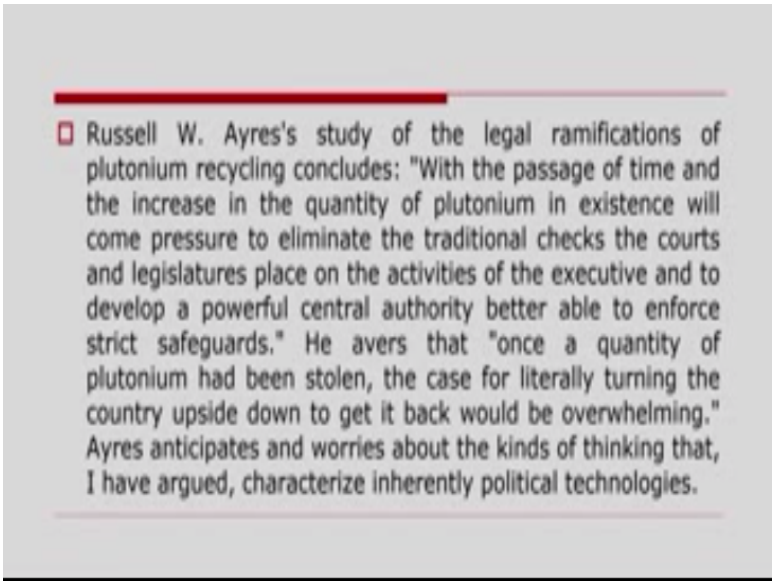
While such findings are far from conclusive, they do reflect a sentiment increasingly common in the land. What is what is that? Now, what dilemmas like the energy crisis energy crisis require is not a redistribution of wealth or broader public participation, but rather stronger centralized public management, that is what may be argued.



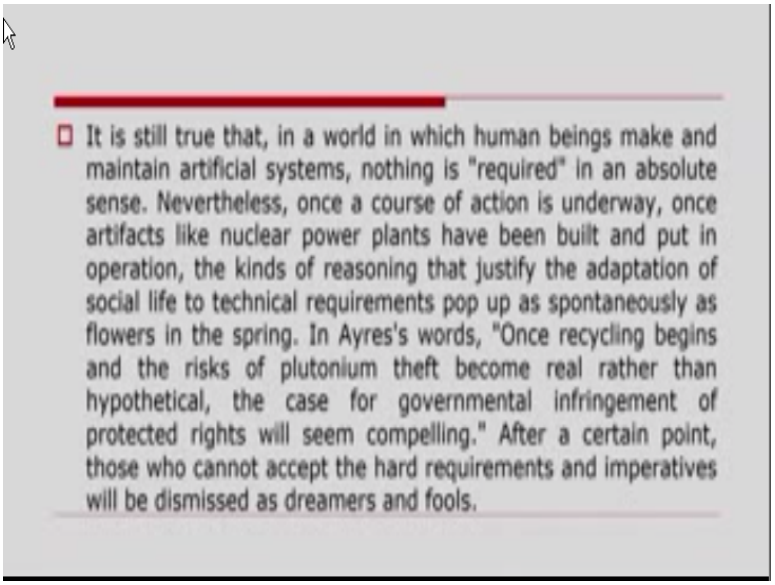
An especially vivid case in which the operational requirements of a technical system might influence the quality of public life is now at issue in debates about the risks of nuclear power. As the supply of uranium for nuclear reactors runs out a proposed alternative fuel is the plutonium generated as a byproduct in reactor cores. Well-known objections to plutonium recycling focus on its unacceptable economic costs its risks of environmental contamination and its dangers in regard to the international proliferation of nuclear weapons. Beyond these concerns however stands another less widely appreciated set of hazards those that involve the sacrifice of civil liberties.

That is what from the very beginning Landon Winner as he started with this, even Louis Monford discussed this that technologies are evaluated, technologies are assessed not simply in terms of their positive and negative environmental side effects. They are not simply judged on the basis of their efficiency they are not simply judged in terms of their productivity, but they must be evaluated in terms of the ways in which they embody specific forms of power and authority. That is why the major casualties in the in the context of the supply of Uranium for nuclear reactors, that it is not simply about economic costs or environmental contamination or dangers in regard to the international proliferation of nuclear weapons. But beyond these concerns however stands another less widely appreciated set of hazards perhaps which is one of the most important factors in this context those that involve sacrifice of civil liberties. my right to life I mean to live a meaningful life, to live a life without any dislocation from my habitat, without being dislocated from my habitat these are very important factors. Loss of civil liberty assumes greater significance as compared to the loss of productivity or efficiency or positive and negative environmental side effects or economic costs or environmental contamination or dangers in regard to the international proliferation of nuclear weapons and so on. That is why when your own self when your own self not simply as an individual, but also as a community, but also as an institution, but also as an organization they are at stake, such economic cost, such positive and negative environmental side effects, environmental contamination, efficiency, productivity, they are not very important, your civil liberties, your self ,your self not simply as an individual I repeat, but also as a community, but also as an institution, but also as a culture, but also as a culture is very important.

The widespread use of plutonium as a fuel increases the chance that this toxic substance might be stolen by terrorists ,organized crime or other persons. This raises the prospect and not a trivial one that extraordinary measures would have to be taken to safeguard plutonium from theft and to recover it if ever the substance were stolen workers in the nuclear industry as well as ordinary citizens outside could well become subject to background security checks, covert surveillance, wiretapping informers and even emergency measures under martial law- all justified by the need to safeguard plutonium. These are the strategy.



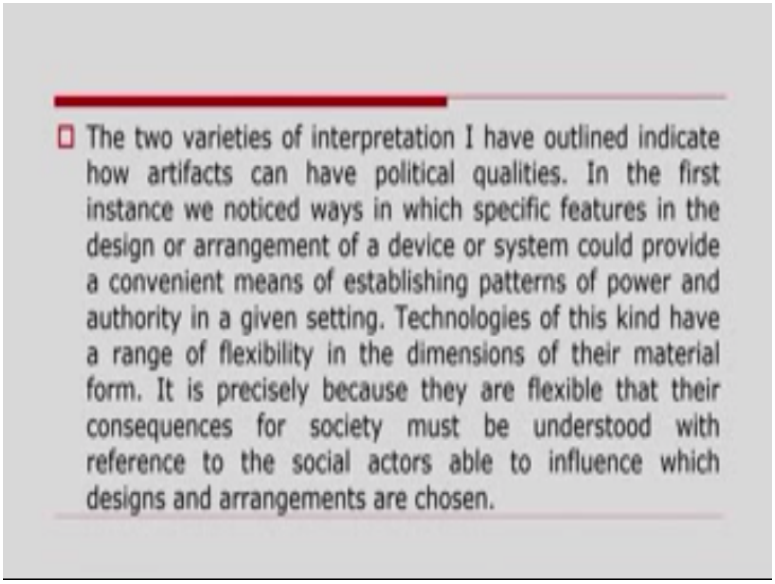
, Russell W. Ayres had study of the legal ramifications of plutonium recycling concludes- With the passage of time and the progress of human civilization the increase in the quantity of plutonium in existence will come pressure to eliminate the traditional checks, the courts and legislatures place on the activities of the executive and to develop a powerful central authority better able to enforce strict safeguards. He averts that 'once a quantity of plutonium had been stolen the case for literally turning the country upside down to get it back would be overwhelming." Ayers anticipates and worries about the kinds of thinking that as Winner has argued that which characterize inherently political technologies.



It is still true that in a world in which human beings make and maintain artificial systems, nothing is "required" in an absolute sense. Everything is required in a relative sense because different communities, different individuals, different groups, different countries, different

nations, different ethnicities, different religions, different regions, they have relative requirements. Nevertheless, once a course of action is under way once artifacts like nuclear power plants have been built and put in operation the kinds of reasoning that justify the adaptation of social life to technical requirements pop up as spontaneously as flowers in the spring.

In Ayers's words, let me quote it here "once recycling begins and the risks of plutonium theft become real rather than hypothetical, the case for governmental infringement of protected rights will seem compelling." That is why the state as a political institutions, its role becomes very important. After a certain point those who cannot accept the hard requirements and imperatives will be dismissed as dreamers or fools. That is how the state characterizes different things, different elements.



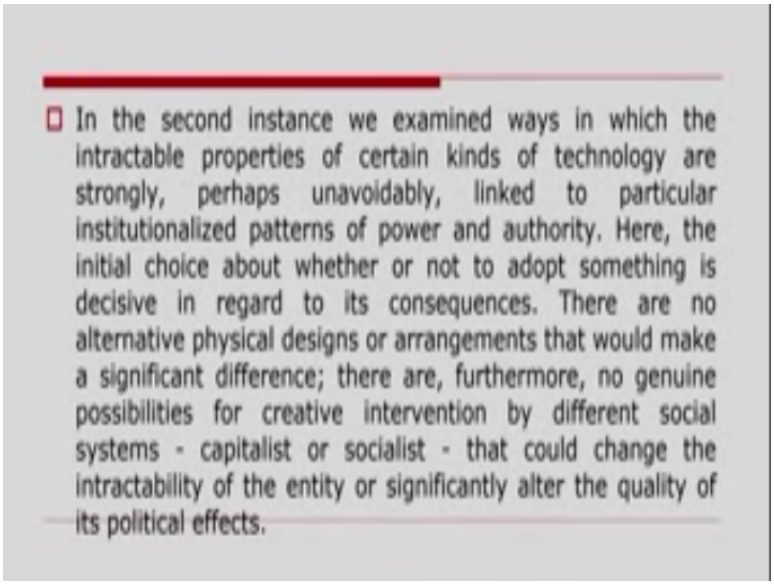
The two varieties of interpretation which Langdon Winner has outlined indicate how artifacts can have political qualities. What are those two varieties? In the first instance we notice the ways in which specific features in the design or arrangement of a device or system could provide the convenient means of establishing patterns of power and authority in a given setting.

Technologies of this kind have a range of flexibility in the dimensions of their material form. It is precisely because they are flexible that their consequences for society must be

understood with reference to the social actors able to influence which designs and arrangements are chosen. In the first instance we discussed that how specific features in the design or arrangement of a device or system could provide a convenient way of establishing such institutional patterns of power and authority in a given setting, in a given framework.

Technologies of such kind have a range of flexibility in the dimensions of their material form. It is precisely because they are flexible. It is because of their flexibility that their consequences for society must be understood with reference to the social actors that are able to influence which designs and arrangements are chosen.

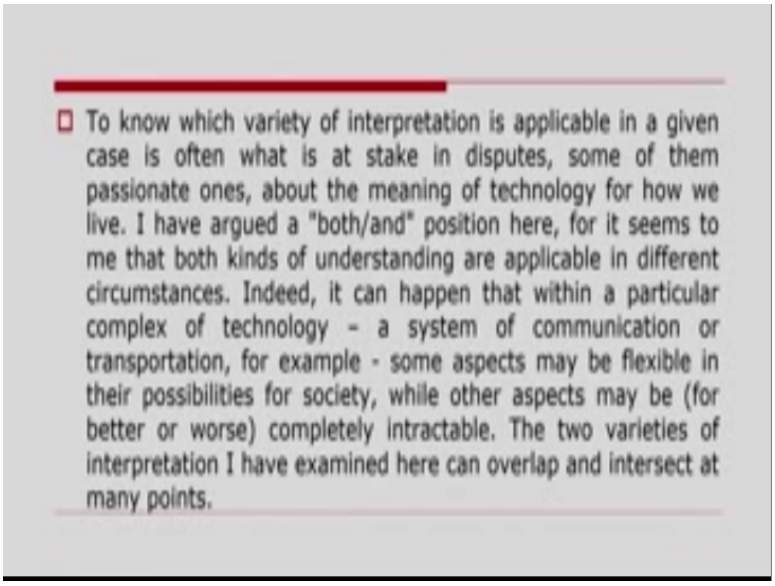
And such selection is as we have discussed earlier, that in the context of Weber, selection is based on cultural relevance. Selection is also based on the kind of consensus that you build in the context of Kuhn. Selection is also based on the kind of the alliance between science and politics that you are going to forge or rather in the present context in Indian context I will say that it is the alliance between science politics and industry which determines what kind of designs and arrangements which are selected or chosen and that was the first instance.



In the second instance we examined the ways in which the intractable properties of certain kinds of technology are strongly perhaps unavoidably linked to particular institutionalized patterns of power and authority. Here, the initial choice about whether or not to adopt something is decisive in regard to its consequences. The consequences they determine what kind of thing that we are going to select.

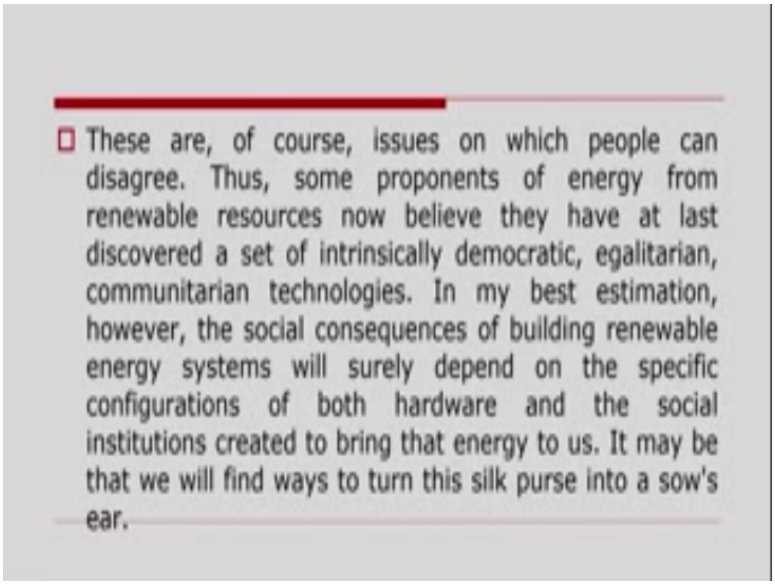
There are no alternative physical designs or arrangements that would make a significant difference. There are furthermore no genuine possibilities for creative intervention by different social, economic, political systems whether it is capitalist or socialist that could change the intractability of the entity or significantly alter the quality of its political effects. Then in the first instance what we have discussed? In the first instance we examined the ways in which specific features in the design or arrangement of a device or system which could provide a convenient means of establishing patterns of power and authority in a given framework, in a given institutional framework in a given institutional setting, and how technologies of such kind have a range of flexibility or in the dimensions of their material form and because of their flexibility that their consequences for society must be understood with reference to certain social actors which are able to influence which designs and arrangements are chosen.

And in the second instance we have examined the ways in which the intractable properties of certain kinds of technology are strongly perhaps unavoidably linked to particular institutionalized patterns of power and authority. And perhaps for this reason the initial choice about whether or not to adopt something is decisive in regard to its consequences and there are no alternative physical designs or arrangements that would make a significant difference. There are furthermore no genuine possibilities for creative intervention by different social systems be it capitalist or socialist that could change the intractability of the entity or significantly alter the quality of its political effects.

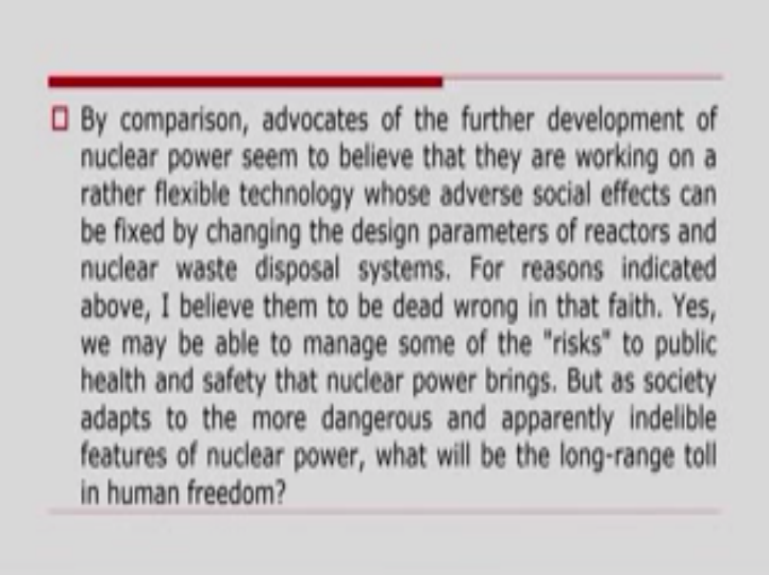


To know which variety of interpretation is applicable given these two instances that we have discussed in a given case to examine which variety of interpretation is applicable in a given context is often that what is at stake in disputes. Some of them, passionate ones about the meaning of technology for how we live , the way Landon Winner has argued both hand positions. We need both kinds. For here for it seems to us that both kinds of understanding are applicable in different circumstances, different contexts. Indeed it can happen that within a particular complex of technology that is a system of communication or transportation for example, some aspects may be flexible in their possibilities for society, culture, economy, polity while other aspects may be for better or worse completely intractable.

The two varieties of interpretation that Landon Winner has examined here can overlap and intersect at many points and such intersectionality has to be understood. perhaps we require both kinds of interpretations in the contemporary context and more so in the Indian context. Such intersection is very important.



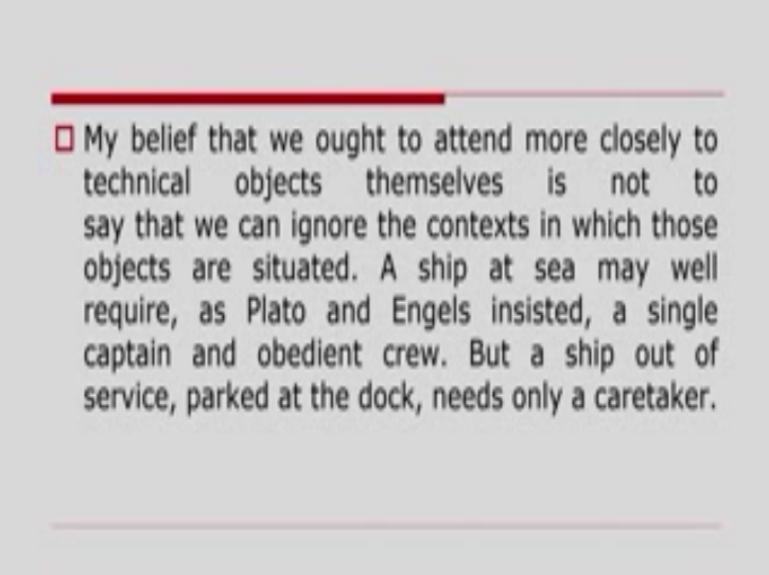
These are of course, issues on which people can disagree. Thus, some proponents of energy from renewable sources now may believe that they have at last discovered a set of intrinsically democratic, egalitarian, communitarian technologies.



However, the social consequences of building renewable energy systems will surely depend on the specific configurations of both hardware and the social institutions created to bring that energy to us. It may be that we will find ways to turn this silk purse into a sow's ear. By comparison advocates of the further development of nuclear power seem to believe that they are working on a rather flexible technology whose adverse social impacts can be fixed by changing the design parameters of reactors or nuclear waste disposal systems. For reasons that we have discussed earlier that we believe them to be dead wrong in that faith.

Yes, we may be able to manage some of the risks to public health and safety that nuclear power brings, but as society adapts to the more dangerous and apparently indelible features of nuclear power what will be the long range of toil in human freedom. You may look at nuclear power, you may look at bacillus thrangensis seeds, both food crop as well as non- food crop, bitty cotton, bitty brinjal. For example, in the Indian context you can look at large dams.

That is why we may be able to manage, we may be able to reduce the level of risks, the amount of risks to public health, safety that t these nuclear power projects, these dam projects, large dam projects, these bitty seed projects they bring about. But as society adapts to the more dangerous and apparently indelible features of nuclear power it is a serious question that we must pose that what will be the long range toil in human freedom.

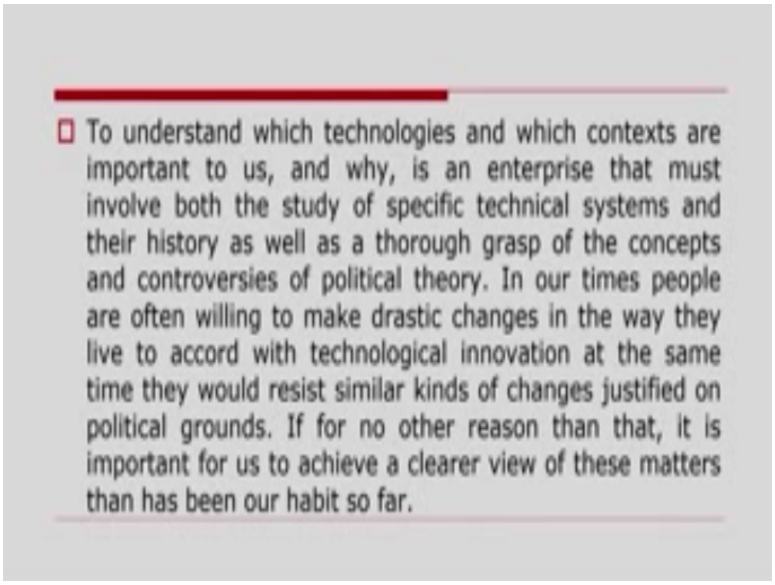


What Langdon Winner believed believes that , we ought to attend more closely to technical objects themselves is not to say that we can ignore the context in which those objects are situated.

A ship at sea may well require as Plato and Engels insisted a single captain and obedient crew, but a ship out of service parked at the dock needs only a caretaker. It is interesting, this is how we talk about social shaping of technology. We talk about social construction of technological systems, this is how we t talk against the way power and authority are closely embedded in the design and control of a technological system.

As Langdon Winner argues that a ship at sea may well require a single captain and obedient crew. when we fly, when we board a flight we always notice that a flight is always controlled by a single captain and an obedient crew and a few obedient crews, but a flight out of service parked at the dock needs only a caretaker or a group of caretakers. That is why, it is the context in which a flight is situated, a flight is located.

If contexts differ then our structures of power, the structures of authority also differ. This is not a universal thing, this is not an absolute thing, but this is a relativist position that that STS scholars are taking.



To understand which technologies and which contexts are important to us and why they are important is an enterprise, is an exercise that must involve both the study of specific technical systems and their history as well as a thorough grasp of the concepts and controversies of political theory.

That we will discuss in Layton junior's article “On Technology as Knowledge”. It is important, it is such the what kind of technologies we require today, what kind of technologies are relevant for us today. If we ask this question then such exercise must involve number one, the study of specific technical systems and number two, the way these specific technical systems have evolved over time and across space and the thorough grasp of the concepts and controversies of political theory.

In our times, in the in the recent times, in in contemporary age what we see people are often willing to make drastic changes in the way they live to accord with technological innovation. At the same time they would resist similar kinds of changes justified on political grounds. If for no other reason than that it is important for us to achieve a clearer view of these matters than has been our habits so far.

Then in this lecture what we have learnt, what we have discussed till now? We have discussed what matters is not technology itself, but the social or economic context in which it

is developed, in which it is practiced. it is not merely to understand the technology itself, but it is also important under what circumstances, ranging from social, economic, political, cultural, legal, ethical, institutional, ideological and so on, which have given rise to such technology.

had technology been a universal phenomenon, then the kind of technology which is used in US, India must also be using the similar kind of technology. We do not use that kind of technology or Africans must be using that kind of technology. It is the political system, which it is the political institution, it is the social acceptance, it is the cultural embeddedness, which determines what kind of technology that we are going to use. And from this the form of knowledge, the form of practice that we tend to look at as a part of technology or rather to put it technology as knowledge assumes greater significance. Then, what we have discussed from the very beginning? During these lectures, we started with ontological questions, then we went into the normative questions, then we discussed the inequalities in science, then social shaping of technology. first technological shaping of society in a bit and then we went ahead with social shaping of technology. Within social shaping of technology, we are trying to discuss number one, technology, I mean political construal of technological systems and number two, we are going to discuss technology as knowledge.