Cultural Studies

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Module No. # 03

Sites

Lecture No. # 10

Biology

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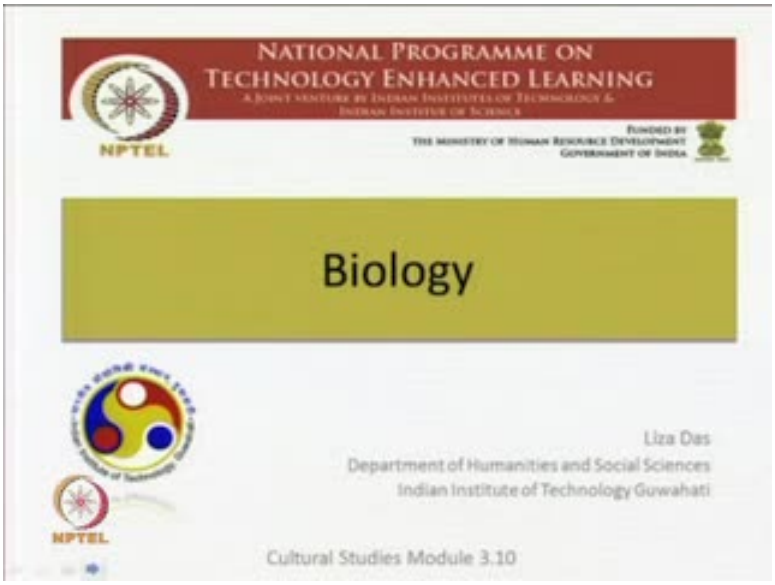

Hello and welcome back to NPTEL, the National Programme on Technology Enhanced Learning, being brought to you by the Indian Institutes of Technology and the Indian Institute of Science. Our course is entitled cultural studies; we are in module 3 and today, in fact, is lecture 10, the last lecture in module 3, which is entitled sites of cultural studies. By sites of cultural studies we refer to, where cultural studies happen.

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Sites, in the sense of location, and we looked at several such sites, namely, for instance space, time, the body, consumption, etcetera. And today, we shall be looking at a field from science, biology and we are going to discuss the different aspects or at least, some of the aspects. We do not have time to look at all the features or aspects of cultural studies, analysis of biology, and we will look at a few aspects of how biology is looked at in cultural studies? So, before we go to biology, let us do a recap of what we have discussed in the last lecture.

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The last lecture, as you recall, was devoted to consumption; in fact, it was part 2 in the series of lectures, sorry, part 2 in the two part lectures on consumption, and we saw that cultural studies and food forms are, you know, an area or a domain of investigation. And among some of the important areas, that may be looked at here are for instance, as we saw nationalism and diet, eating in and eating out, eating and identity disorders, anxieties, and ethics, as far as food is concerned.

So, you see that obviously, there would be, and would be overlapping of domains between say, for instance, sociology, anthropology and cultural studies, more than in other domains that we have seen. But we looked at one cultural practice, namely that of eating out, and we saw, how the cultural practice or phenomenon of eating out, so much could be said, you know, there is a whole discourse from cultural studies on the phenomenon of eating out.

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We also saw that eating out as a cultural practice entails a paradox; and the paradox is the one, one aspect of the paradoxical is that, definitely eating out is a source of pleasure, where one gets, feels that one has a sense of power and choice, it also entails identity formation. But on the other hand, cultural studies shows us, that, it also is, you know, these, this sense of power, choice, pleasure and identity formation, could really be illusions in a certain, certain sense because it actually is a practice that involves pretence, because as we saw later on, the whole format is already determined or pre-determined.

So, there is, what critiques call a simulated, a simulated performance; in fact, one is performing according to certain codes of performance.

So, this whole, as you know, cultural studies talks about issues of power, issues of politics, issues of science and signifying practices. So, this is also something that is entailed in the study of eating out as a cultural practice.

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Then we saw that there is a difference between eating in and eating out, where eating in is seen as a pro-tradition, a traditional practice, where there is reaffirmation of boundaries among members of the households; there is maintenance of tradition, there is stability, and there are reaffirmations of, division of, borders of divisions of labor, for instance.

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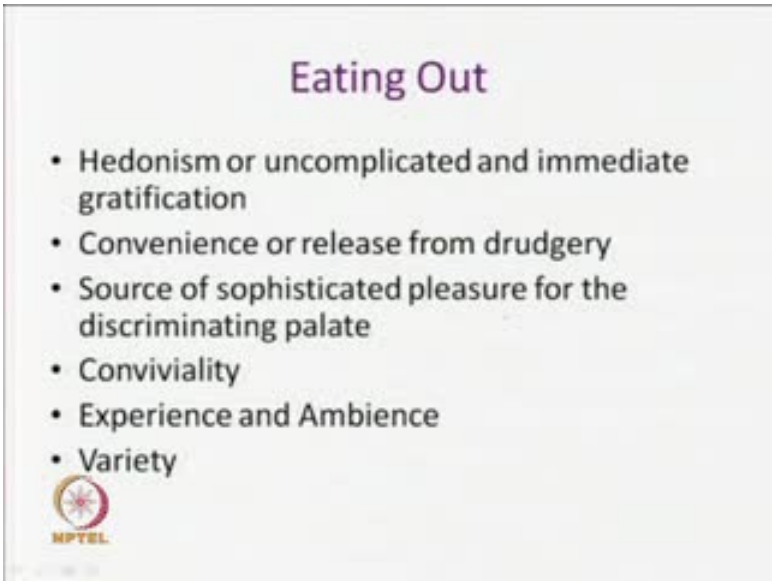

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Whereas, in eating out we found, that eating out could be, could be a, an uncomplicated exercise in immediate gratification, of one, of one's culinary tastes or drives and at the same time, it is also seen as an, you know, a platform for experience, for conviviality, you know, for variety, etcetera. So, whereas, where eating in was seen as a traditional practice, eating out was seen as a nontraditional practice. Then, we also found, that compared to pre-modern times or rise of the market in modern times led to, as far as eating out is concerned, led to an urbanization of morals and manners, where eating out, is also an act of, you know, necessity, rather than pleasure.

And there was also, as we saw, at least, in eighteenth century, year of the beginning of the opening of the coffee houses, which was anti-hierarchical and anti-traditional, both, in location and practice.

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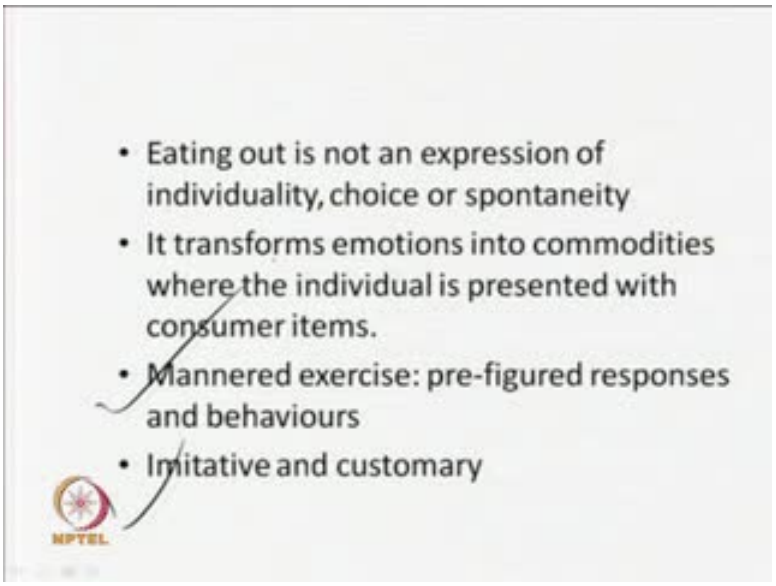

Therefore, eating out, we also saw, transforms emotions into commodities, where the individual is presented with consumer items, but it is also seen as a mannered exercise - imitative and customary.

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So, let us now come to the topic of discussion at hand today in this lecture, and the topic as you know is biology, as seen from a cultural studies angle, or sorry, perspective and let me as always, declare the key source texts. In this lecture, the key source texts from which we shall be gleaning the points, and from where I shall also be quoting and then unpacking the quotations, like we do in the classrooms when we read extracts from the prescribed texts. These texts are Chris Barker's Cultural Studies: Theory and Practice and Chris Barker's Making Sense of Cultural Studies and P. Bouissac's Encyclopedia of Semiotics.

Well, let me take you back to the first lecture. The first lecture in this module was devoted to the body and we saw, you know, in that lecture, how body, you know, is easily appropriated by cultural studies in a very rich sort of a way? You usually think that the body is a given, we realize that the body is also something, that is appropriated by discourse.

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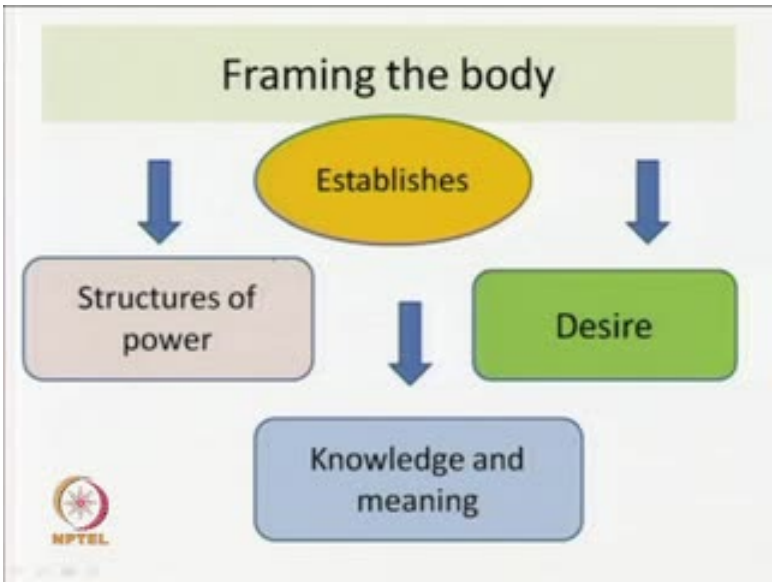

And therein, if you look at the slide, we saw, that framing the body and looking at body through cultural practices, we find that there are, you know, framing the body establishes structures of power and desire, and in being established in structures of power and desire, the body falls into a discourse, where knowledge and meaning emanate from the structures of power and the realities, and the rhetoric of desire.

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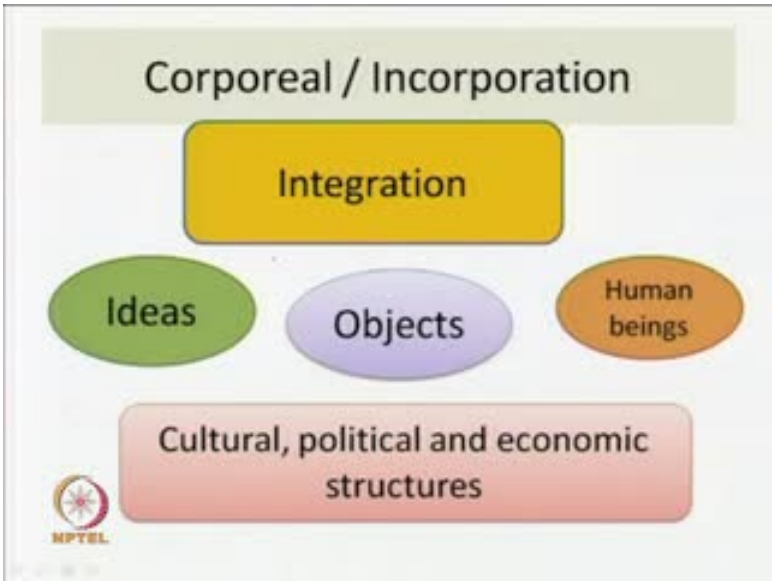

We also saw, this whole, this whole discourse of, of the corporeal and the discourse of incorporation. As far as the body is concerned, is, it also entails, from a culture studies perspective, it involves ideas, objects, human beings, in relation to cultural, political, and economic structures. So, the body, like any other site, any other site, where culture happens, this is important for us to understand that even we know, the body is something that is deeply inscribed in culture, political, and economic structures.

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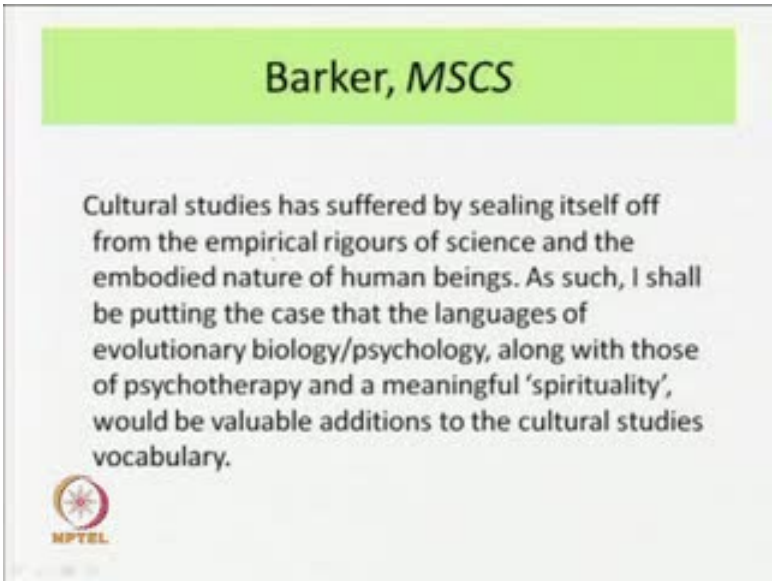

So, let us now, let us now carry on, and we are looking at Chris Barker and we are reading from - Making the Sense of Cultural Studies. In this quotation, Barker draws attention to the fact, that, you know, it has not been the right move as far as cultural studies is concerned, or the, even the humanities is concerned; it has not been a good move to keep, you know, biology, or, or the, even the rigours of science away from the humanities in general, and cultural studies in particular.

Of course, we have a real slide, philosophy of science and sociology of science and technology, the history of science and technology, so in the same way, Barker holds that we should bring in the rigours and of empiricism, the rigours of science. And here, we look at some of its formulations, as far as one branch of science is concerned, that is, biology. Now, let us read from Barker.

Cultural studies has suffered by sealing itself off from the empirical rigours of science and the embodied nature of human beings. This is very important. Very often, we make this distinction, which is a Cartesian distinction, known as Cartesian dualism between the body and the mind, forgetting unfortunately, that we are embodied beings; we are beings in a body and that the mind, as far as we believed, that it emanates from the brain, the mind is also something that emanates from the body.

So, Barker here draws our attention to the embodied nature, to our embodied nature, the fact that we are embodies as such. He goes on to say - as such, I shall be putting the case that the languages of evolutionary biology or psychology, along with those of psychotherapy and a meaningful spirituality, would be, available, sorry, valuable additions to the cultural studies vocabulary. Now, obviously, what he is doing here is, he is bringing a well-established domain in the sciences, which is evolutionary biology and from which, if you remember, either in lecture 3 or 4 in module 1, we talked, we talked about evolutionary psychology, its various principles, etcetera, its importance for cultural studies.

Now, let us remind ourselves again through Chris Barker's words, that the languages, the discourses of evolutionary biology and in particular, evolutionary psychology, which tells us or gives us knowledge about how our minds developed over, you know, a huge periods of evolutionary development of the species.

This is something that we should bring into a study of cultural studies, analysis of biology. So, again, let me read once again, as such, I shall be putting the case that the languages of evolutionary biology, evolutionary psychology along with those of psychotherapy. Now, how are these two related - psychotherapy and psycho, evolutionary psychology?

We understand how the mind developed over time, what we could say, you know, what the so called primitive brain was the reptilian brain for instance, the mammalian brain, and how for instance, fear, fear and other very strong emotions, are emotions, that have been with us in our evolutionary development. This, the knowledge of these things and how, you know, one, how one could study or present responses, particularly the strong responses like fear and anger, if he study these in relation to, how we have evolved, now, how our psychology has evolved, may eventually add to psychotherapy and has in fact, added to psychotherapy, and what he calls also meaningful spirituality. A meaningful spirituality, in the sense, that we understand, how our emotions, how we as embodied beings, how we, have come to, have the very emotions, that sometimes rule us.

So, the important point that Barker makes, is not just that we, sort of, reveal the, you know, what happens in biology as a discourse, and we reveal what cultural studies has to tell us. He also has a pragmatic, has a pragmatic, you know, pragmatic agenda, so to speak, here in trying to say, that the so many of the malices, so many of the psychological illnesses, psychosomatic illnesses, that we have in modern times, may be understood and cured and may be a therapeutic exercise, when we look at ourselves or through a bio-cultural perspective.

So, this is one of the ways; I am going to look at two of, two ways of looking at biology through cultural studies. The first way is this that we should not, we ought not to take off the findings or not to ignore the findings being given to us, by areas like evolutionary biology and evolutionary psychology studies and emotion, for instance. And what these have to tell us, what light these have to shed, as far as our current behavior in, you know, which affects our cultural practices, which determine our cultural practices, these are concerned.

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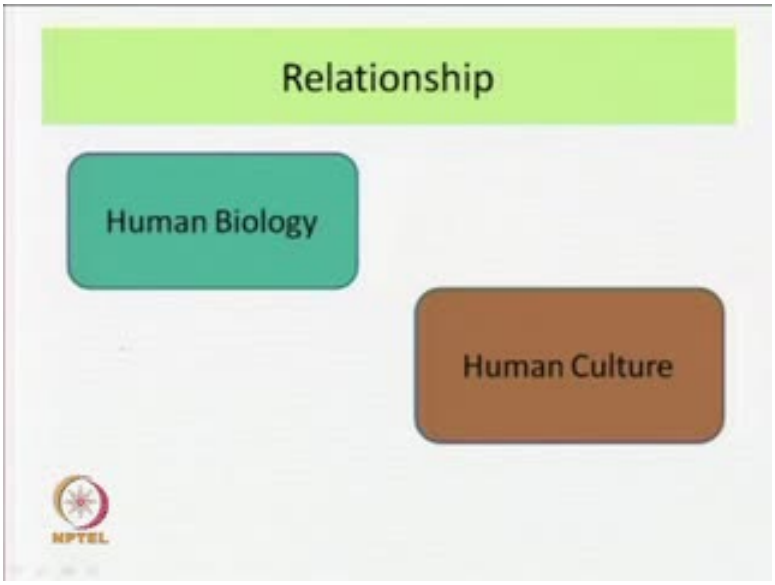

So, the fundamental point, now, the fundamental point in any study of culture in relation to biology, or any study of biology in relation to culture, will point to these two important domains, that is, human, obviously human biology and human culture, and our question here is or our, you know, our job, here in this lecture is to find out the relation between human biology and human culture.

To ask questions like - is human biology different from human culture? Or, are there overlappings, if there is a relationship? What, what are the mappings that can be done, what are the connections that can be done, which throws light on both, ourselves as embodied human beings and also ourselves as cultural beings?

So, the chief debate that would be brought to you or that would be shown to you by any cultural studies scholar is the debate, the very well-known debate, between nature and nurture. If you look at the slide, nature is, you are talking about biology here, and nurture is about cultural construction.

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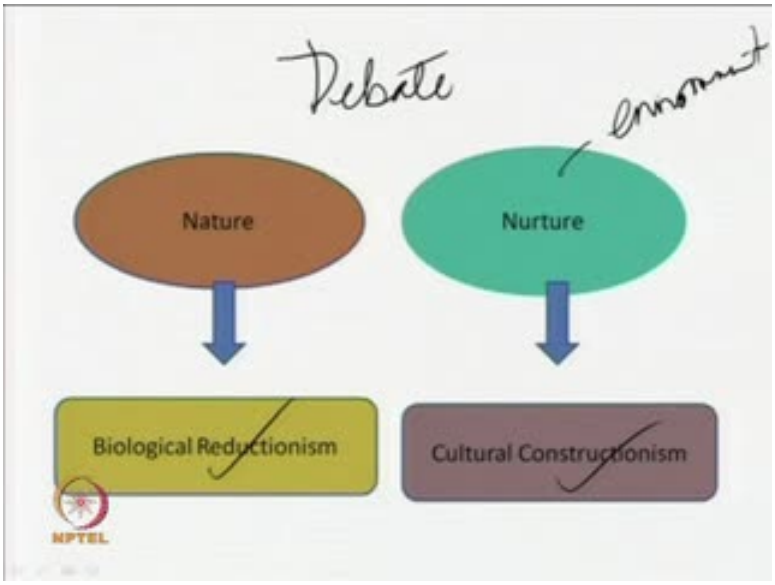

Now, the debate is this, the debate, is nature the only determinant of our both, our physical and cultural, you know, physical and cultural features? Is nature everything? Critiques of the school of thought would say, that there is, if you believe in, completely in that we are made by our biology, that biology is all, then we run the risk of, biology, what is called biological reductionism. Biological reductionism, simply means, that we reduce, we reduce all our analysis, all our propositions, formulations and articulations about human beings to, to simply the biological aspect.

And the other part of the debate is to do with nurture, that is, how one, you know, and the importance here definitely of the cultural environment, the cultural environment in which we live. And the, you know, orientation here would be called the theoretical orientation here, would be called one of, cultural constructionism, in so far as critiques believe, that we are, everything about us, is cultural construction.

We are made not by biology, biology may be a given; in fact, many of, many of the cultural critiques want even to say, that even biology is not a given. Then, even biology, if you remember the second, our second discussion on gender, where even the sex gender binary today, is set to be untenable where sex is also, you know, considered to be a matter of language and discourse. So, here too, we find that in the nature-nurture debate everything is, or at least, to a large extent, we are supposed to be culturally constructive. So, the debate or the formulations, or one aspect of the formulations on this interface

between biology and culture would point to the nature-nurture debate, and definitely, there are proponents of nature, as well as, there are proponents of nurture, and the debate is one that is still raging.

So, then critiques, that Barker say, that instead of harping on the differences between biological reductionism and cultural constructionism, let us see, how best, you know, we can make an alliance? And, you please look at the slide; here he calls for an alliance between evolutionary biology and cultural studies.

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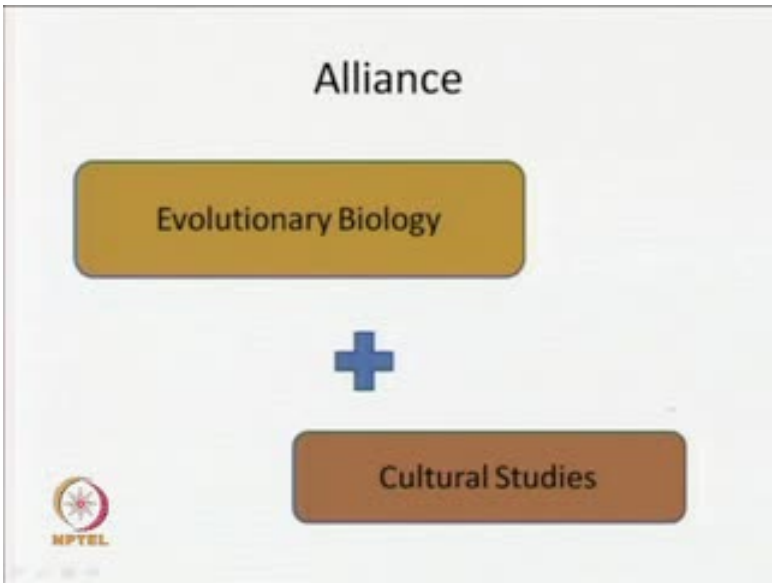

Remember this, you know, he calls for such an alliance, not simply, you know, to add to the debate on nature versus culture, but also to find out ways in which certain, certain malice, malices by (( )), that plague our species could, could have therapy, therapy which, in which there is an alliance or there is a borrowing from both evolutionary biology and cultural studies.

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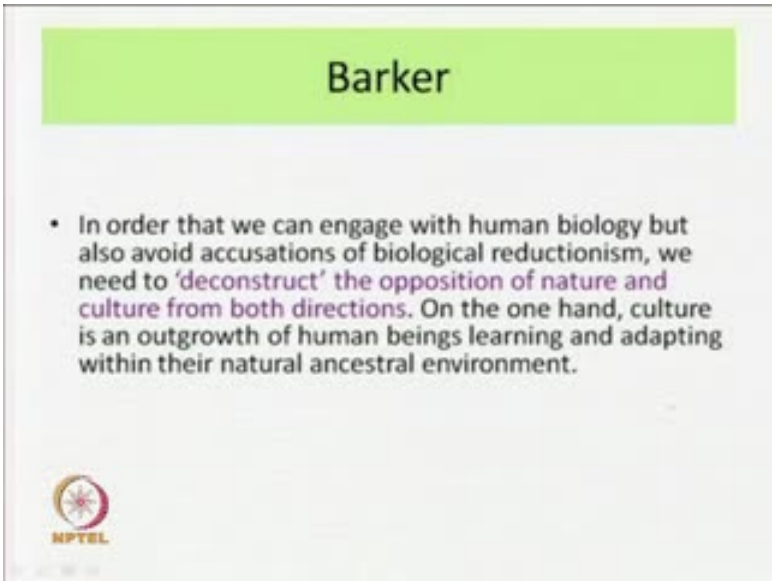

Now, let us read again from Barker, in order that we can engage with human biology, but also we avoid accusations of biological reductionism, we need to deconstruct the opposition of nature and culture from both directions. This is what we have been talking about, just on this, while, just few moments ago.

He says that in order, that we can engage with human, biologically, biology fruitfully and at the same time avoid the label or the accusation of reductionism, what we have to do is, we need to dismantle or we need to, you know, we need to get rid off or deconstruct, as he uses the word deconstruct, the opposition of nature and culture, or of nature and nurture, from both directions.

Let us read, on the one hand, culture is an outgrowth of human beings learning and adopting within their natural ancestral environment. Definitely, he says that culture is, you know, one of the ways in which we can dismantle or deconstruct; this is definitely, that we are natural beings, we are, we have a natural ancestral evolutionary, that is, environment and culture is something, that definitely, did not develop or grow away from the natural ancestral or evolutionary environment.

So, in that sense, the nature-culture or nature-nurture debate, and the very sharp divide is something definitely, that is, we have to recognize as being untenable. Now, you realize, how, how biology becomes a part, in fact, of cultural studies, instead of remaining just a science, as we know it.

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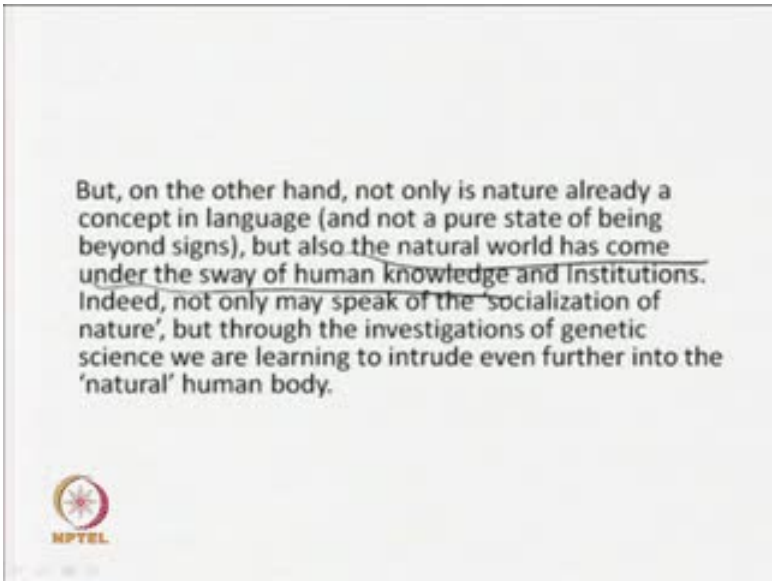

Then, Barker goes on to say - on the other hand, not only is nature already a concept in language, that is, it is not a pure state of being beyond signs, but also the natural world has come under the sway of human knowledge. This is important. See, just a while ago, what was the point that he was making? The point that he was making was, that of course, we have been born in a natural ancestral environment, which has its own characteristics, which has its own features and a history that we cannot deny; history, prehistory rather, that we cannot deny. So, this is a fact of culture, accepting the fact, that it is a part of biology.

He says, on the other hand, biology or nature or the study of nature, would also have to acknowledge the fact, that it is a part of culture. How is it a part of culture? It is a part of culture, as he says, here again I am quoting him again, that not only is nature already a concept in language, nature is, there is a discourse of nature, there is a way in, you know, way, how we talk about nature, there is a way in which we look at nature or describe nature, and the description of nature cannot be completely, cannot be completely kind of, taken away from the context, cultural context, in which we use, we describe nature, in the first place. So, that is why, he says, nature is not a pure state of being beyond science.

So, nature too, and it might be difficult for, you know, some scientists or biologist to accept this, but the fact or the argument at least, being given by Barker here is, that nature too, is a matter of signifying practices.

But also, the natural world has come under the way of human knowledge and institutions. Indeed, not only may we speak of the socialization of nature, but through the investigations of genetic science, we are learning to intrude even further into the so called, natural human body.

So, Barker is very, you know, in fact, I think, he very strongly puts forward his argument, that you will have to see nature and culture has overlapping entities, and time has come when cultural studies has begun to look at biology, where the binaries, where the rigid binaries of nature and culture would have to be broken down.

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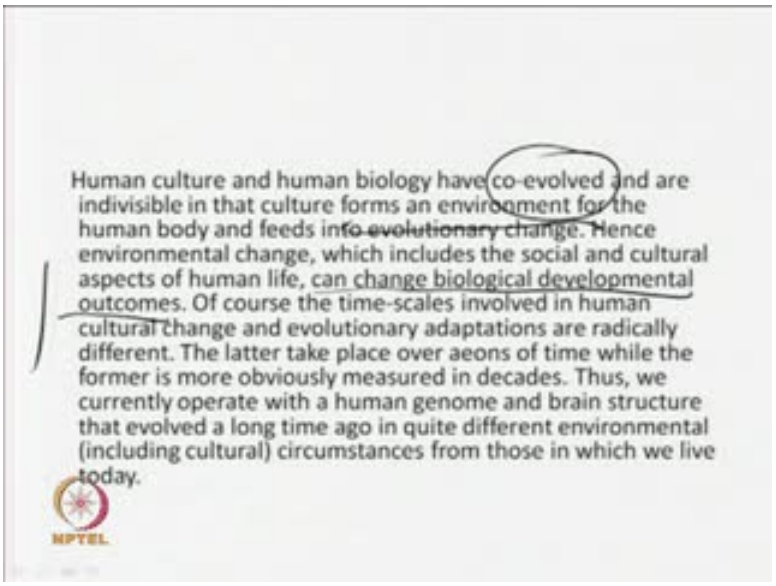

Then, again, further from Barker and it is important for us to, as I keep saying over and over again, it is important for us to look, since cultural studies is description, is a way of talking, discourse is a way of talking about things, it is important for us to look at how, how these formulations, in what, what discourse this formulation are being given by these important scholars of cultural studies?

So, I will read from here and then I shall explain. Human culture and human biology have co-evolved; this is important, have co-evolved and are indivisible in that culture forms and environment for the human body and feeds into evolutionary change. Evolutionary change is not therefore, a matter or purely of biology; evolutionary changes take place, take place, or are also interestingly motivated by culture and cultural practices in a species. So, again, human culture and human biology have co-evolved, and are

indivisible in that culture forms and environment. Culture is an environment for the human body and feeds into evolutionary change.

Hence, environmental change, which includes social and cultural aspects of human life, can change biological developmental outcomes. This is most important. Of course, the time scales involved in human cultural change and evolutionary adaptations are radically different.

I may have mentioned in the lecture, in my fourth lecture in module 1, that the time scale, as far as human evolution or evolution of a species is concerned, where you know, the time taken for an adaptation to be established in an important way, to be mutations, that are not, not sort of, freak, freak cases or mutations or changes, adaptations that are there to stay with us, it takes from 1000 to 2000 generations. This is important, that is, the time scale, it takes from a 1000 to 2000 generations for any change, important adapted change, physical change, biological change to be instantiated. So, obviously, cultural changes, the time scale is narrower than the biological changes.

Now, the latter, that is, evolutionary adaptations; the latter take place, as he says, over aeons of time while the former is more obviously measured in decades. Remember, this is what we have just discussed, while cultural changes measured in decades, evolutionary change is measured over thousands of years. So, say 20000 to 200000 years or a 1000 and more generations should have passed before any important changes takes place; you see, how different it is.

Further, Barker says – thus, we currently operate with a human genome and brain structure that evolved a long time ago in quite different environmental, including cultural, circumstances from those in which we live today.

Evolutionary psychologists have also pointed, you know, to some, you could almost say, anomalies that are there with us. For instance, it is said that we fear spiders and snakes more than automobiles where perhaps, you know, chances, you know, of being killed, you know, by or being hurt by automobiles, chances are more than being hurt by snakes or chances of being hurt by, you know, electrical sockets are more; chances are more than being hurt by snakes or tigers.

But because we, you know, because our minds bear this legacy of evolution, it may seem a little anomalous for us, but it is a fact, that these things are with us to stay because at some point in our evolution, we actually had to, you know, had to fight ferocious animals on a daily basis or we had, you know, more encounters with snakes than we have today. So, these are some of the anomalies that are being pointed to here.

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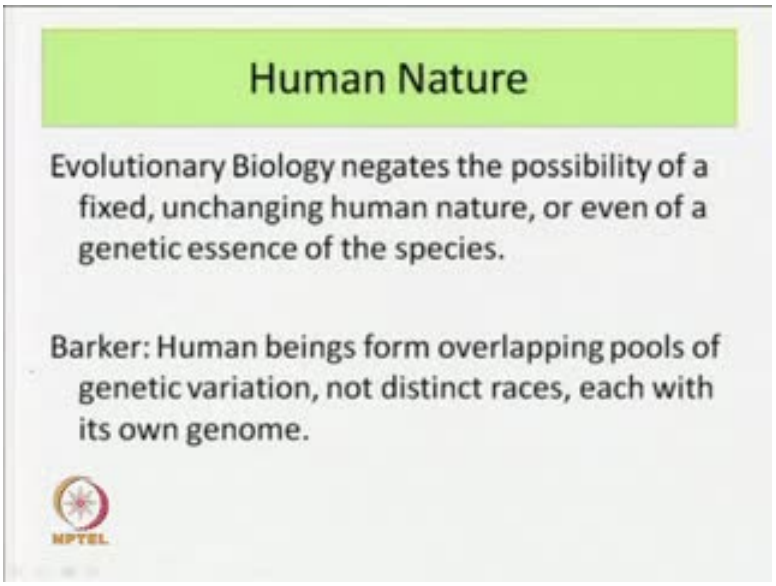

Therefore, we talk about human nature, as Barker says - evolutionary biology negates the possibility of a fixed, unchanging human nature. So, if we talk about human nature or, you know, what are the characteristics, if we ask questions like, what are characteristics of being human? Or even that are essential, or remember the word anthology, which we used so much in module 1 and 2. So, we cannot say that there is an anthologicalally unchanging or essential human nature because culture, as we have seen, feeds into also human development. Barker therefore, says - human beings form overlapping pools of genetic variation, not distinct races, each with its own genome.

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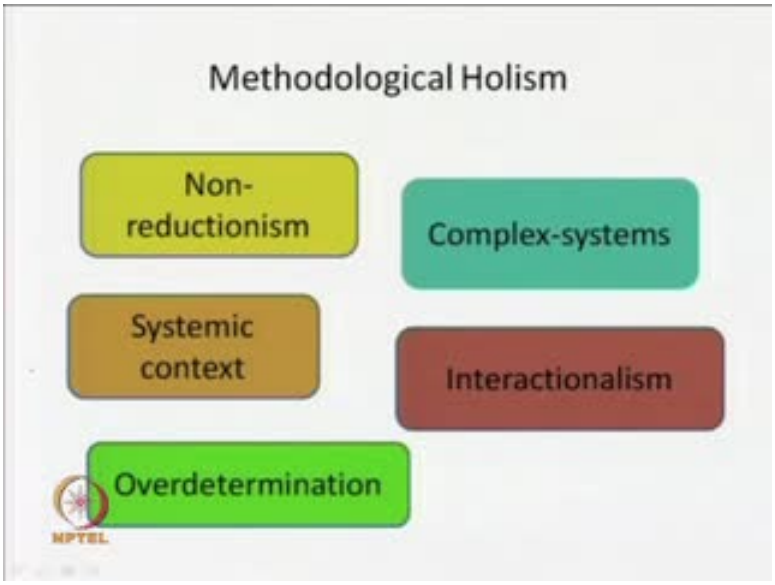

Therefore, again, critiques like Barker say, that we therefore, have to practice what is called, the methodological holism. We have to have a holistic approach and not, you know, remain within the discourse, the old discourse, the old debate of nature versus culture; and we have to have a methodology in our research and understanding, which is non-reductionist, which takes cognizance of complex systems, and which holds that there is a systemic or system based context to every development. Also, in biology and interactionalism and over-determination, this is the point that we had discussed earlier, over-determination, in that, there may be many causes, that we are not aware of, that contribute to a certain phenomenon.

So, we should have a methodology, which is therefore, holistic in nature, which is neither completely scientific nor completely based on humanities.

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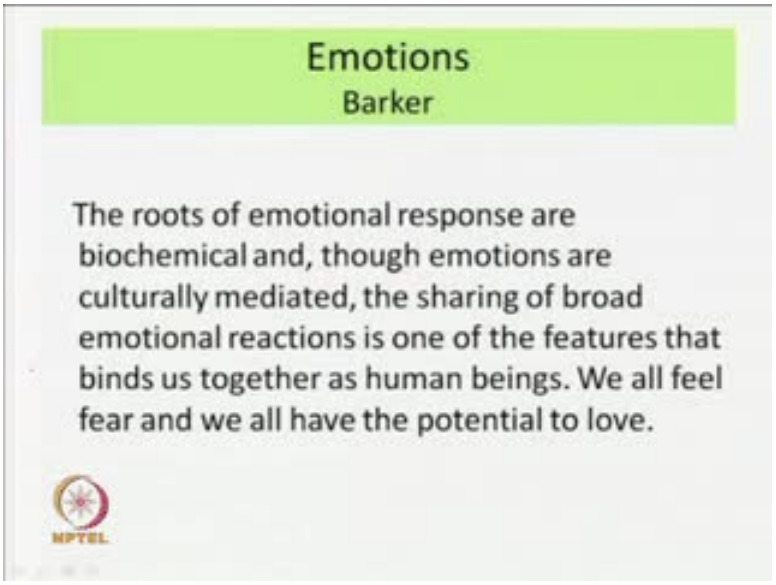

Then, Barker also draws attention to the fact that emotions are, you know, from even, our biology has to tell us about emotions, is also important for us in understanding ourselves as cultural beings, and I am quoting from Barker - the roots of emotional response are biochemical. To understand that the roots are our emotions, are biological, and though emotions are culturally mediated, the sharing of broad emotional reactions is one of the features that binds us together as human beings. We all feel fear and we all have the potential to love; so, even, and when we understand this commonality, you know, among all races, among all people of the world, that we are bearers of a common legacy of emotions, even that he says, may lead us, you know, to, towards the therapeutic. And it may be a therapeutic exercise in understanding ourselves, as common holders of emotions.

Then, I said, that I would talk about another aspect all this while. We have been talking about evolutionary biology, psychology, nature, nurture, emotions, etcetera.

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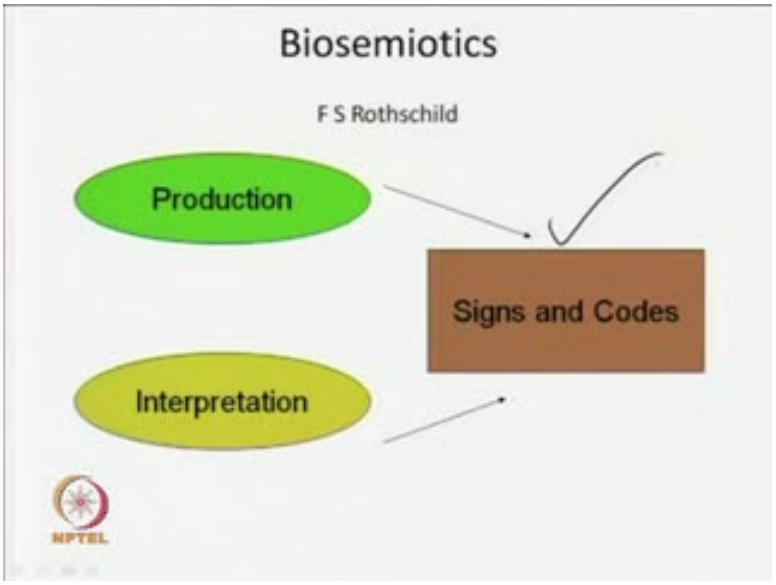

I will quickly end by talking about another way of looking at biology from cultural studies, and this is known as Biosemiotics. By now, you know what semiotics is? Semiotics is the study of signs, so F S Rothschild was the person who coined the term biosemiotics.

Now, semiotics is, as you know, the production and further, the interpretation of signs and codes. When we looked at structuralism, we understood that we ourselves produce signs and then, we ourselves interpret signs; so, biosemiotics then, would mean what? Biosemiotic would mean looking at biology also as a system of signs and codes. This is extremely important and this is, I think, a very important contribution of cultural studies in its effort to look at biology. Also, as you know, not as material given, but also as a system of signs and codes that organisms give out and interpret, now let us look a bit in detail at biosemiotics.

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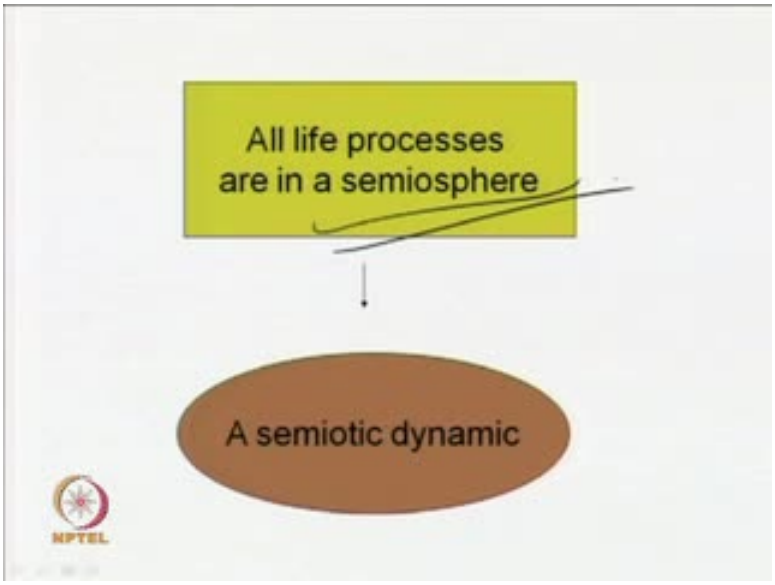

Now, biosemiotics would say, that all, you know, all life processes could be seen as living in a semiosphere. We have come across words like, you know, words like atmosphere for instance, but look at this beautiful word here – semiosphere. All life processes are part of a semiosphere, or is part of an environment of signs and codes, where there is, where they operate within a semiotic dynamic. Now, let us, let us see what, what are the components, what components, or what semiosphere comprises?

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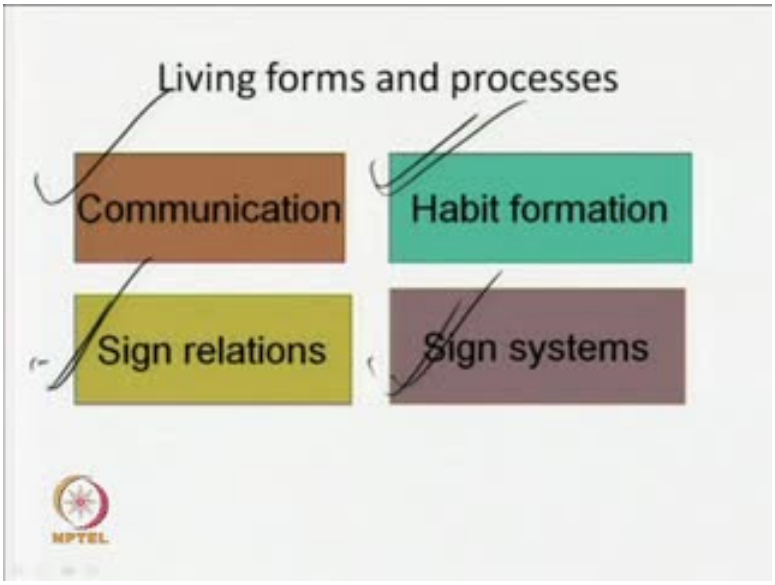

Now, living forms and processes, it will not be difficult for us to accept this that living forms and processes also communicate. It is not that only human beings communicate or that, you know what we call, the greater animals communicate, we also know that bacteria communicate, may not be in the way, that we communicate, but bacteria also and all organisms for that matter, we may argue, you know, obey and take part in a system of communication.

So, these systems of communication lead to, what we call, established communication practices or habits. There is a habit formation, a habit formation of all organisms, biological organisms, following a certain code of communication and then settling with them, or having a strong communication code, that, in that instantiates itself through habit formation. Therefore, these codes, relationship between codes, could also be seen as sign relations, a matter of coding and encoding and decoding signs, and also biological systems, and that living forms and processes, could also be seen as living within a sign system or operating within a sign system.

So, you see, how the cultural studies, one of the most important aspects of, theoretical aspects of cultural studies, that of sign systems of signifying practices, could be applied, as is, shown by, shown by cultural studies. Theories could be applied to living forms and processes; let me, let me also state here that this is not being said as an analogy or a metaphor and as a matter of metaphor.

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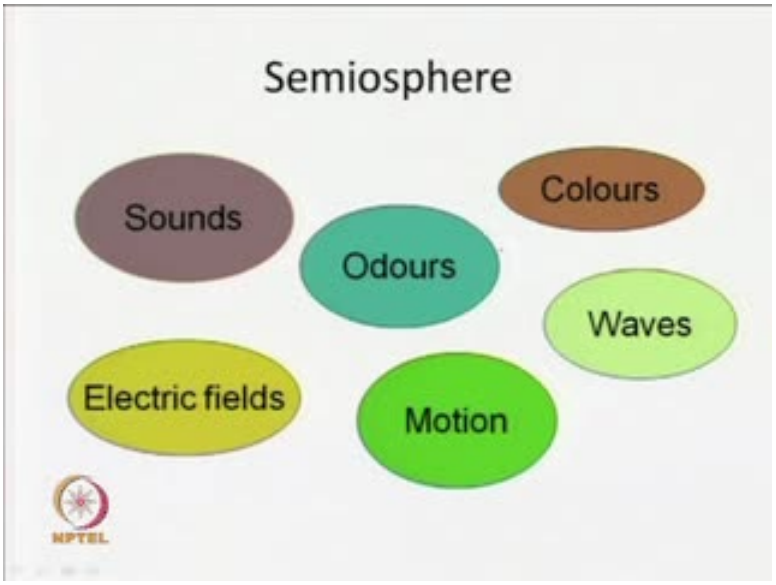

It seems, as if, this actually happens that living beings and processes do communicate and they do follow a system of codes and so, we may say, that biology is also a matter of semiotics or of giving out signs and understanding signs and operating within a sign system.

Therefore, what, now what are the components of the semiosphere? Let us look at the slide here please. The components of the semiosphere…, Or where we can find signs? Or where you can find encoding and decoding? These are sounds, these, as far as the organic world is concerned, these are sounds; these are odours or smells; colors; waves; electric fields and motion, among many others; so, these are also, you know, signs within a system of communication.

Today, many scholars from communication system, from information technology, many philosophers of information technology, of electronics, say, that, you know, these are also, everything is sign system, wherein an electric field is a sign system, there is an encoding and decoding, motion, waves, colors, these are also sign systems.

So, there is an increasing awareness and acceptance to a certain degree, that the world, even, people even say, that the scholars even say, that perhaps the world, the universe itself may be seen as being underlined by a system. Of course, that there is a code and I am sure, in the signs there is this hunt for the philosopher's stone, which is the ultimate code that underlies the universe. So, it is important for us to know, that it is not simply a, by metaphorical flourish, that we are saying that, you know, organic life is a matter of sign systems of sending out signals; in fact, in fact it is so, that organic systems do live in a, what is called, semiosphere.

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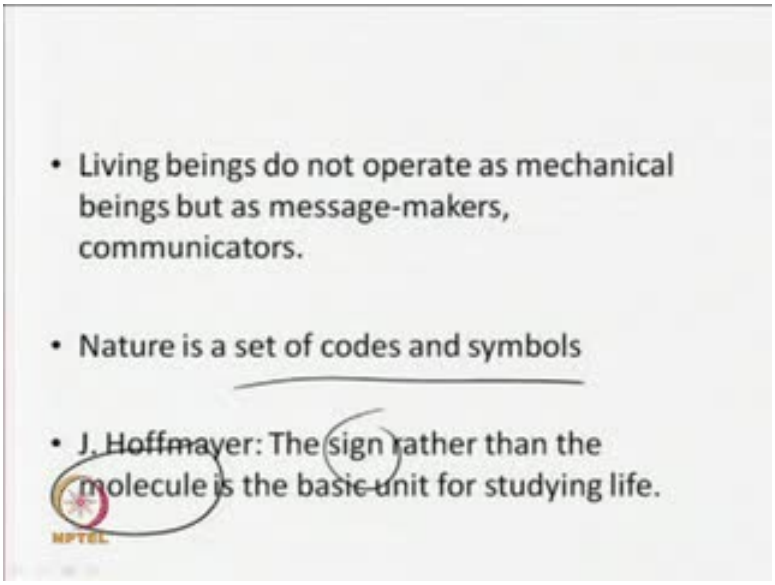

Therefore, we will end by saying, that living beings do not operate as, simply as, mechanical beings, but living beings are message-makers. If you accept the fact, that complex organic beings like human beings and some animals are message-makers, they make the message, messages and then they, they, they encode their messages and they decode them, establishing very successful communication systems, we have to also, we have to also, a kind of, extend this to all life; so, living beings are, all livings beings are not just mechanical beings, but they are message-makers and they are communicators.

Nature, therefore, this is important, nature therefore, from this point, is a set of codes and symbols and therefore, the scientific enterprise may be seen as, also, may be read as an attempt made by human beings, to decode the set of symbols and codes, that a, kind of, comprise nature.

And finally, let me quote from J. Hoffmayer, an important name in the study of biosemiotics. J Hoffmayer says that the sign, the sign rather than the molecule is the basic unit for studying life. I think this sums up very beautifully, at least, what we have been talking about all this while, about biosemiotics. What if, you say, biology proper has been looking at the molecule as the basic unit of studying life? We perhaps, also need to look at the sign as the basic unit for studying life. And may be, such an enterprise and such a motivation or orientation, may tell us things, that have been hidden or that is not been able to look, understand, or we are not because we have not looked at from that

perspective, this kind of orientation may tell us or give us knowledge in both domains, in both, in biology, in both, and also in cultural studies.

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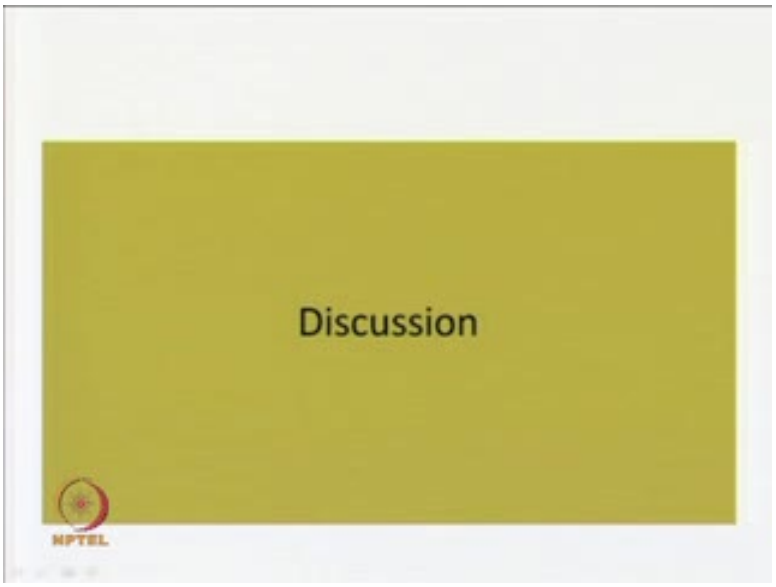

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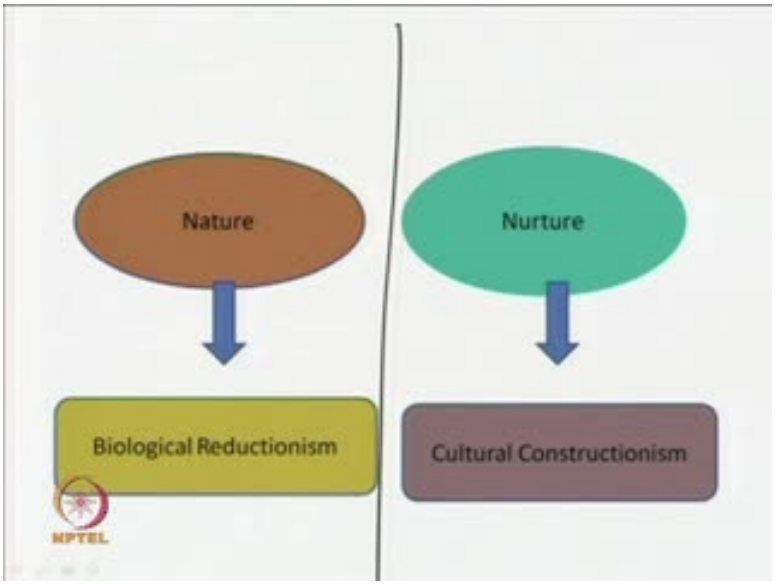

So, we will now go on to the discussion and the couple of questions, that as always, we will be trying, we will set questions for ourselves and then try and answer them. If we get a question like, what is the chief debate in cultural analysis of biology?

The answer is, that the debate in, the chief debate, or you could say the mega debate, in culture analysis of biology and even in biology for that matter, is the debate between nature and nurture, or you could say the debate between nature and culture.

Now, what happens when we make a clear divide here and, you know, what happens when we try to understand ourselves only from the point of view of nature only? As, you know, natural beings, what happens is, we fall prey to a way of doing research, to a methodology, which is called, which is called biological reductionism. Biological reductionism, then you can also write, that biological reductionism simply means, with, reducing all knowledge about ourselves to biology, to in fact, as Hoffmayer says, to studying the molecule as the basic unit of life.

On the other hand, then we have to say, on the other hand, nurture looks, is about cultural constructionism. The other side of the debate, or when we look at everything as culturally constructed, may be, probably, even throughout the pure, so called, purely and I know, this is the problem when you say purely biological, but if we completely evade what the biological sciences have to give us, then we also fall, you know, we also make the mistake, you know, of adopting a methodology which is pure constructionism.

So, the point here is, in even, as you write about the debate we may say, that today, the debate is held to be untenable because it is, it is this, these kind of strong binaries, are no longer tenable and our, or the efforts of so many cultural scholars, has been to see, how nature will interface with culture and how you can build a new discourse, which involves writing about nature through culture and also, writing about culture through... And also, we then finally we have to say, that through Barker, that there is a need to deconstruct the opposition of nature and culture, as we have said just now, from both directions.

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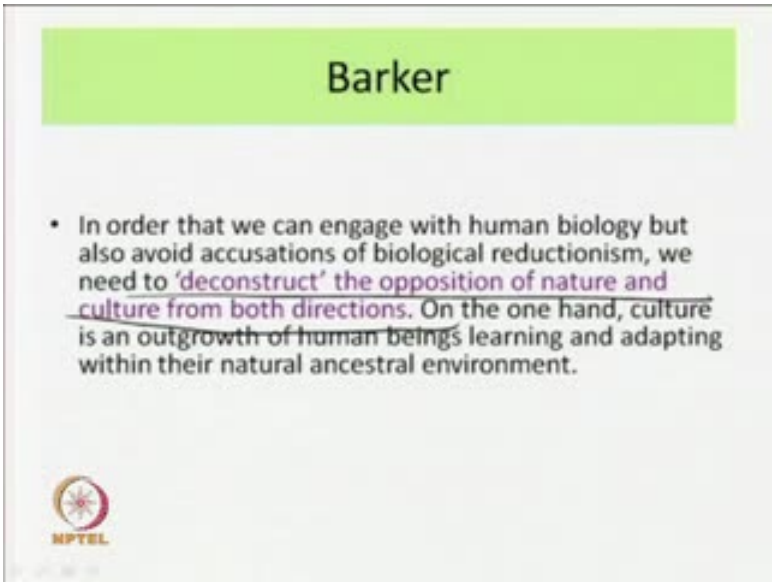

So, if you get a 5 mark question for instance, then you simply do not say that the debate is about nature versus culture. Then, we also go on to where we quote critiques like Barker, and to say how this, there is a need to deconstruct this primary binary opposition.

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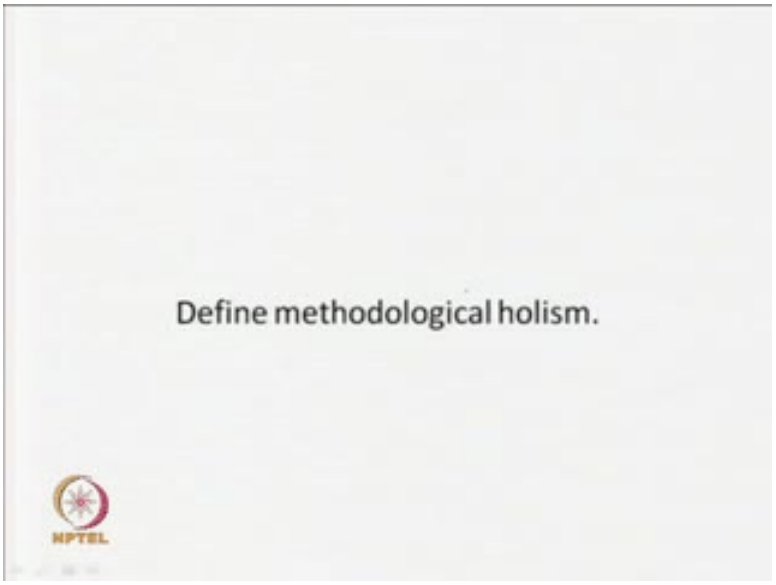

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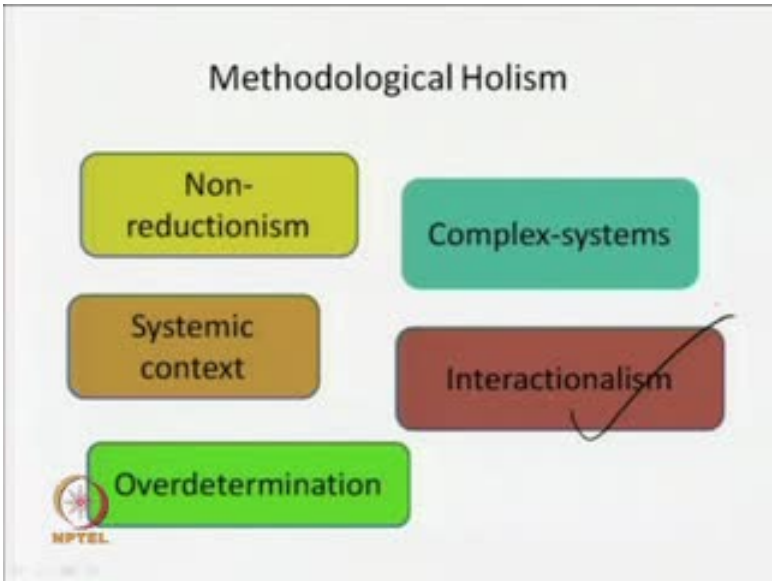

Next, if you get a question like, define methodological holism, particularly in reference to the study of biology and culture. Then, you say, that methodological holism is, you know, is an orientation, really, is an orientation, which holds that one should have a non-reductionist methodology as one, as one articulates, articulates or makes propositions; or as one writes about, or builds a discourse about biology and of culture and methodological holism; looks at organic beings as complex systems and the systemic context. The context of the system, is something, that is also appropriated or the something that at least, that is something, that is pointed to by methodological holism,

that we have to look at organic systems as complex systems, even if, even at culture systems, that called as being complex systems with a systemic context.

And we also have to very importantly accept the fact, that there is an interaction between nature and culture, which we call interactionalism. The theory of interactionalism holds that culture feeds into biology, culture feeds into development; in fact, in our evolutionary history, culture has always contributed even to biological development.

Finally, over-determination; over-determination, as we saw, is definitely a part of methodological holism, why? Because over determination has a holistic attitude, holistic orientation in its, in its avowal of the fact, that there may be, so many more causes to a particular effect, that causes, that our beyond our grasp.

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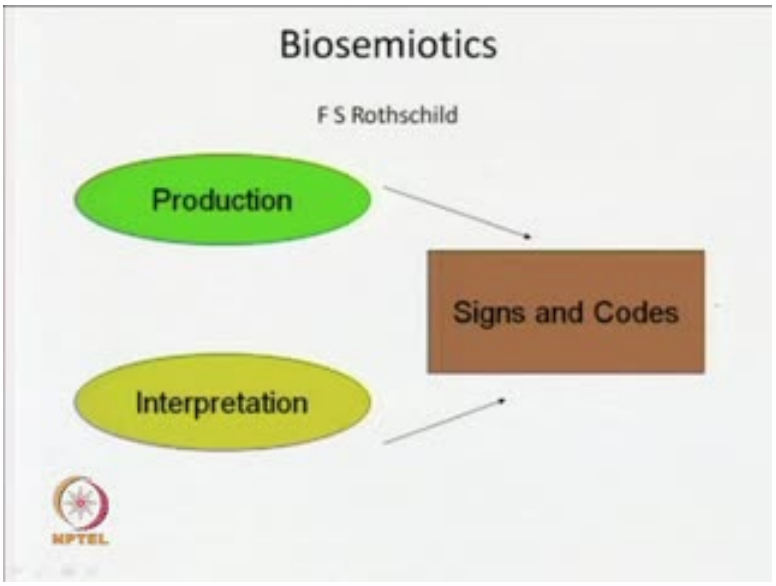

Then, what is bio-semiotics? Bio-semiotics is defined as, you know, as a domain which sees biology in terms of culture, in terms of one of the, in one of the chief articulations of cultural studies, that is semiotics. And it sees the biology organic forms as a system of signs and codes, which have been both, produced by the organism and are interpreted by the organism.

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In this, living forms and processes are seen as engaging in communication and communication system, which is based on signs and codes following the, following of which leads to a habit formation in the so called, lesser organisms and these, therefore, communication within living forms and processes are matters of sign, relations and sign systems.

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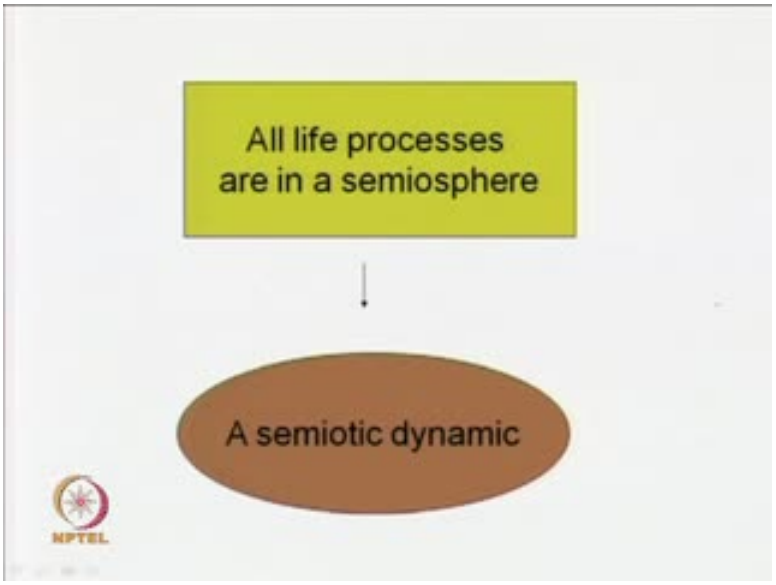

Finally, what is a semiosphere? It is held in biosemiotics, that all life processes live in or operate within a semiosphere, which is an ambience and environment of signs and codes.

And within a semiotic dynamic, the semiosphere includes sounds, odours, colors and even electric fields, motion, and waves, all these things are to be also interpreted; if we, if we have to look at biology from a cultural studies and semiotic approach, these have to be interpreted as part of the semiosphere.

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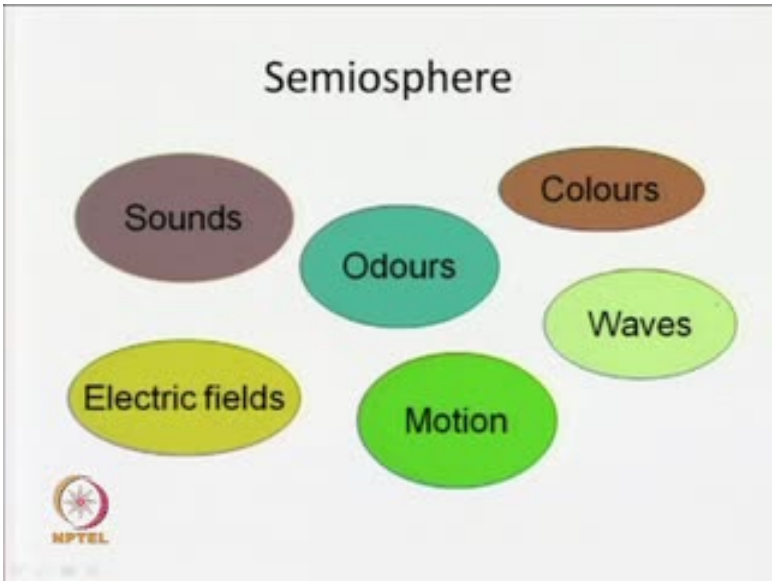

So, I hope, this, you know, our deliberations on bio-semiotics, on emotion, on evolutionary biology particularly, also to the words of Chris Barker, as we have read parts of his texts here, I hope this has been important. And from those of you, who are doing biotechnology for instance, could perhaps also benefit from this, this rather different angle that has been brought to you. And this interface of biology and culture is one that I believe, is a very fruitful interface and has so much to tell us as researches and students.

Thank you so much.