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Science, Technology and Society

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What we have been discussing that the fundamental differences between verification regimes is propounded by investigation, as well as positivism on the one hand, falsification engine is propounded by hypothetical deductive engine by drawing on the analogy between two systems of criminal. This is very important okay I mean we must provide some at least an example, to show the basic differences between the principle of verification regime and the principle of falsification okay. According to one system the judge has to start with the assumption.

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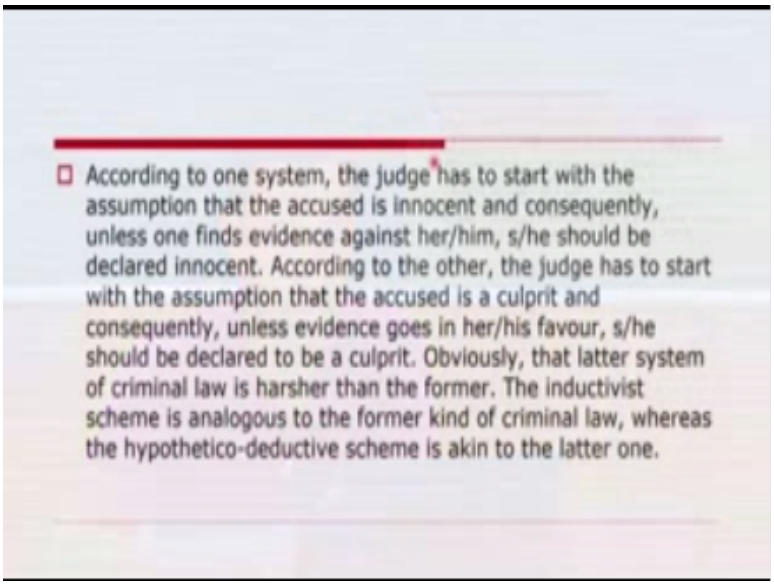

That the activist supposes in a court of law okay the judge starts with the assumption that the accused is innocent and consequently unless one finds evidence against her or him, again she or he should be declared innocent okay. I mean from the very beginning the judge we start that

know the accused is innocent and unless and until one find evidences against him or her he or she should be declaring. According to the other perspective the judge must start with the assumption that the accused is a culprit and consequently unless evidence goes in he or each favor she or he should be declared to be perfect, obviously the latter system of criminal law is harsher than the former.

The inductive scheme in analogous to the former to the first kind of criminal law that the judge starts with the assumption that the accused is innocent okay, and the hypothetical deductive means akin to the latter one and in a second, one that the judge must start with the assumption that that term the accused is a culprit and consequently, unless evidence goes against him or her, he or she should be declared to be a culprit okay, he or she remains to be a culprit okay.

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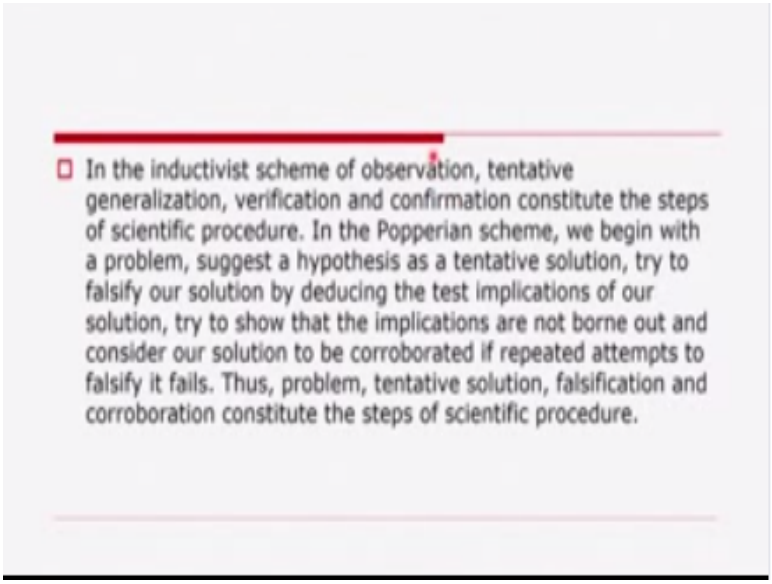

In the inductive schema then in the inductive team of observation tentative generalization verification and confirmation constitute, the steps of scientific procedure as we have already discussed, we always start with in observational data, tentative generalization, verification and then once those observations are confirmed we tend to arrive at a particular conclusion okay, we tend to generalize.

However in the popery schema we begin with a problem then as we have already seen in the finished schema we start with science starts with observations, in the hypothesis schema science starts with a hypothesis, in the positivistic schema science must start with observable; in the

popery schema okay science must begin with approval. We must be able to identify a problem research always starts with a question, that is why in research while writing digitations.

We always tend to see research always starts with a question, if you do not have a question then you cannot do research. Then to answer to that question in a satisfactory manner what we tend to do, we tend to suggest a hypothesis which is a tentative solution to a problem you have already discussed this and then try to falsify our solution not by verify, but not we are not trying to verify, we are trying to falsify our solution by deducing the paste implications of our solution in the problem and then we try to show that the implications are not borne out and consider our solution to be corroborated, if repeated attempt to falsify it fails.

Thus then what are the steps that we are going to follow identification of a problem suggestion of a hypothesis as a tentative solution to a problem or hunch, then the systematic falsification and if the hypothesis is tested wrong then, the hypothesis is subject to very few days okay. Under such circumstances under certain, conditions okay our hypothesis is tested wrong. Hence it is subject to refutation we have to refute, that I mean such conjectures hypothesis is alternatively known as a conjecture, such conjecture is required to be refuted if they are tested wrong okay, but if they are tested right if our hypothesis if our tentative solution, if our conjectures are tested right under certain conditions, then a hypothesis would have said, that no let us accept this.

But popper said no let us not accept this because we have not tested our hypothesis on under all conditions, we have not yet tested. We have tested our hypothesis under certain limiting conditions, that is why let us not accept our hypothesis okay, let us corroborate it ok if they are tested right under certain limiting condition. What is the meaning of corroboration? Then now we are trying to keep our hypothesis permanently tentative that under these, under certain conditions under certain limiting conditions our hypothesis has been tested right, hence we are keeping it permanently tentative.

If in future our hypothesis will be tested wrong under certain other conditions okay then it is subject to refutation, it will no longer be subject to corroborate okay. Thus problem identification tentative solution, systematic falsification and corroboration in the popper in schema constitute the steps of scientific procedure. Okay purpose theory of scientific method is called hypothetical deductive.

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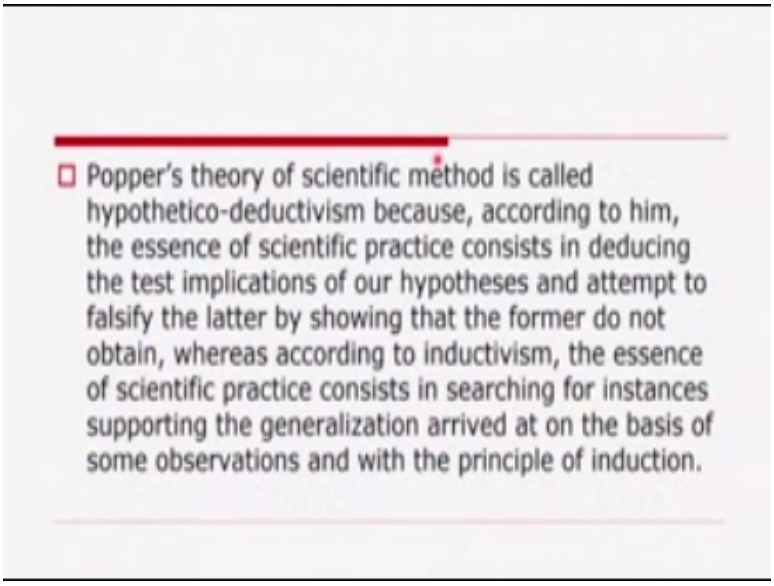

ISM as we have discussed one recently because according to proper the presence of scientific practice consists in deducing the test implications of our hypothesis and attempt to falsify the lecturer I mean hypothesis okay by showing that the former do not obtain, whereas according to inductive ISM the essence of scientific practice consists in searching for instances supporting the generalizes and arrived at the arrived debt, on the basis of some observations and with the principle of induct okay and popper was very much critical about the principle of induction, that some particular instances you tend to arrive at a complete general ideas okay.
That will be not simply observed because our observations are not presupposition list, okay our actions are not presupposition, and our questions are not presupposition list okay. When I say how questions are not presupposition list because we tend to select our question, we do not our question is not a given one, we tend to select our question. We always select our question okay and we select our question on the basis of cultural relevance that is why it is very important to understand the significance of a particular phenomenon okay, in it is historical contemporary in terms of time and space distances.

Proper claims that I mean he advocate that the hypothetical deductive model or scientific method is superior to the inductive model, inductive east model for certain reasons, as he rejected the principle of induction he tried to provide a robust structure of hypothetical deductive in deductive model as the hypothetical deductive model. According to popper is superior to that of

the inductive east model okay, then what are those really let us see, first it does justice I mean the hypothetical deductive model.

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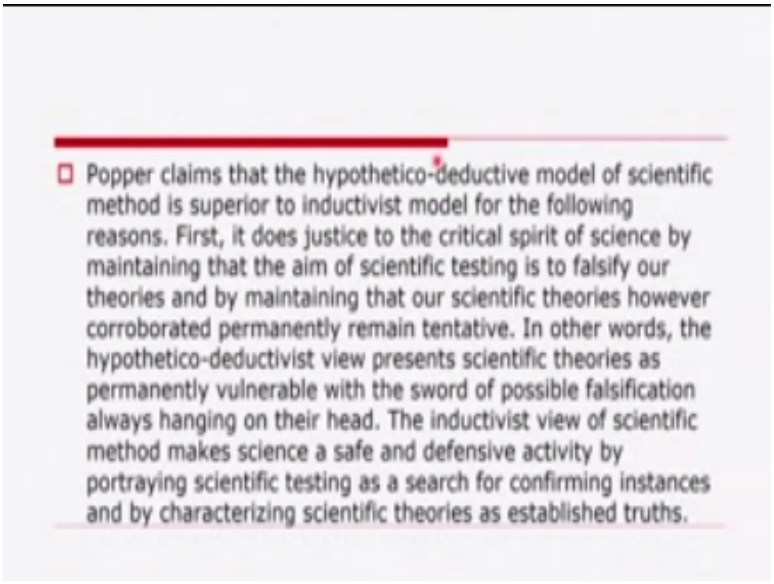

Does justice to the critical spirit of science, by maintaining that the aim of scientific testing is to falsify our theories and by maintaining that our scientific theories, however corroborated formal remain tentative, in other words the hypothetical deductive is view present scientific theories as permanently vulnerable with the sword of possible falsification always hanging or hanging on their head. Our hypothesis our conclusions that we make okay I mean they remain permanently tentative they that side is they are subject to quorum corroboration okay.

The inductive view of scientific method makes a safe and defensive activity by portraying scientific testing as a search for confirming instances and by characterizing scientific theories as established roots. Then where is popper was trying to take his hypothesis his conclusions quite open okay.

I mean it may be reject it I mean those hypothesis, even if they are corroborated under certain limiting conditions there is a possibility of the rejection in the future under certain other limiting conditions okay, next whenever we make general generalizations whenever we make conclusions okay.

There they were in the popper in schema they must be kept tentatively I mean permanent identity okay, suppose we were in the inductive schema we make reference to let all meaner mortal mean Socrates is a man, sorry Socrates is mortal, Socrates is man therefore all may not matter. How can it further the way hypothesis argued that till I and you were a live how can I say that all men are mortal, then you have to keep on increasing if you have to keep on accumulating the instances of observation that is a serious limitation of interpretation okay.

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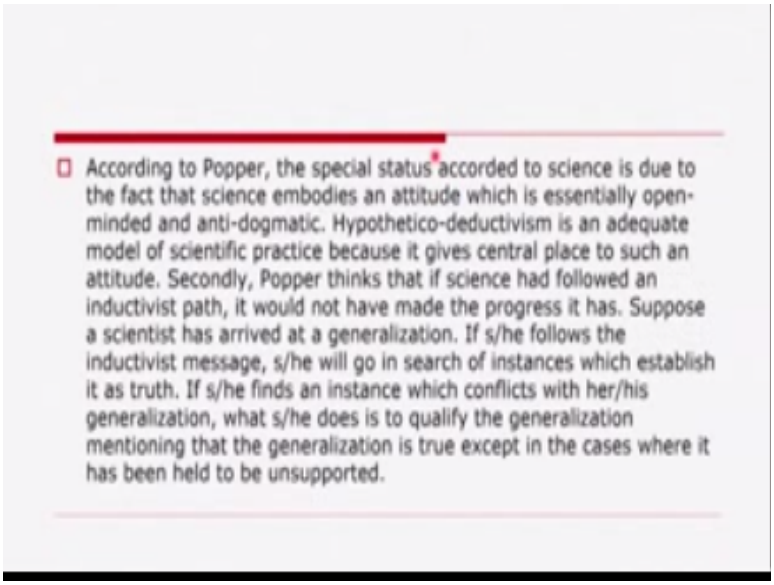

According to popper the special status according to science is due to the fact that science embodies an attitude which is essentially open-minded and ant dogmatic okay, this is important science must be examined with an open mind it must find science embodied an attitude which is essentially open minded science does not believe in dumb much science must be anti dogmatic okay, even if even if science makes certain claims always tries to update it result, revised its results if it sees some internal or external problems in that result, science admit its mistakes

which the proponents of theology and metaphysics, they did they were not open-minded and they were not they were they followed all sorts of dogmatic Nudge okay.

Hence hypothetical deductive is an adequate model of scientific practice for because it gives central place to such an attitude. Secondly then first we set hypothetical deductive is okay the it does justice to the critical spirit of science by maintaining that the aim of scientific testing is to falsify our theories and by maintaining our scientific theories however corroborated permanently remain tentative. Secondly popper thinks that if science had followed an inductive back path it would not have made the progress attached. Suppose a scientist has arrived at a general ages a concrete ontology or conclusion if she or he follows the inductive methods, she or he will go on in search of instances which establish it as a truth okay.

I stood if she or he finds an instance which conflicts with her or his generalization which she or he does is to qualify the generalization mentioning, that the generalization is true except in the cases, where it has been held to be unsupported. I am interested in this context popper is right in this context I mean pop the way popper is trying to make reference to such instances that whenever you can pose this question to a to any scientist, that whether he or she goes on and on and on and on accumulating only instances to support a particular theory.

Does knowledge make progress in this kind of scenario? No in the property in schema it is not in the popular schema knowledge mix, I mean we make progress in the production of knowledge in the knowledge acquisition activities only when, we try to falsify the existing theory okay. We must try to collect data which can falsify the existing scientific table okay and such qualifications input heavy restrictions on the scope of the generalization.

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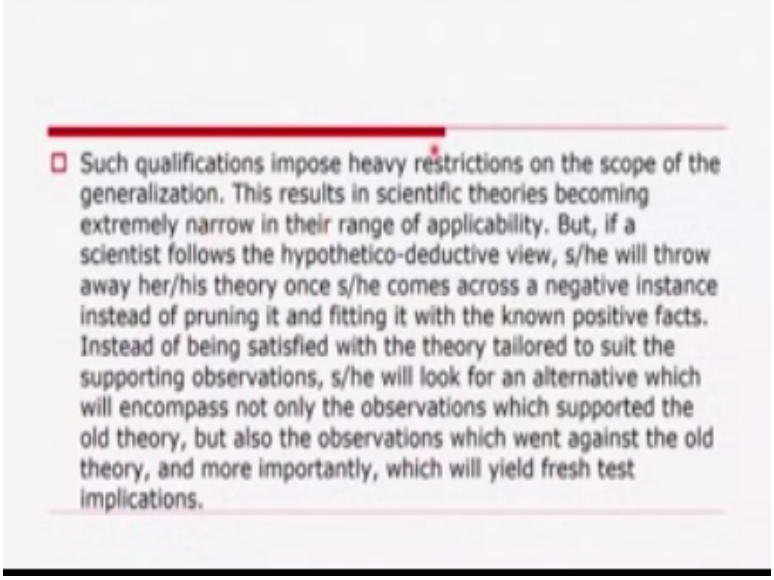

The results in scientific theories becoming extremely narrow in the range of applicability but if a scientist follows the hypothetical deductive you see or he will throw away he heard his theory one see or he comes across a negative instance instead of running it and fitting it with a known positive fact instead of being satisfied with this with the theory tailored to suit the supporting observations he or he will look for an alternative which will encompass not only the observations which supported the old theory but also the observations which went against the old theory and more importantly which will in fresh taste implications this is very important.

Then a scientist I mean the practitioners of science or practitioner of science must try to update must try to revise the theories based on these kind of newer and newer data that he or she a collect the theoretical progress that science has made can be explained by the fact that science seeks to come out with bolder and bolder explanations rather than taking records to the defensive method of reducing the scope of the theories to make them consistent with facts.

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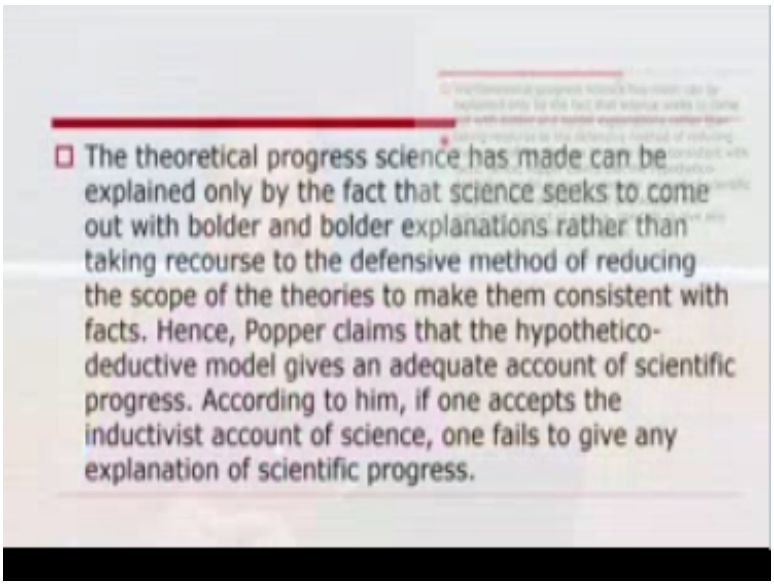

Then ultimately we are trying to manipulate the change manipulate the fact okay which is not correct in the proper hence okay in our claim that the hypothetical deductive model give san ending with account of scientific progress according to popper if one accept the inductive East account of science one fails to give any explanation of scientific progress.

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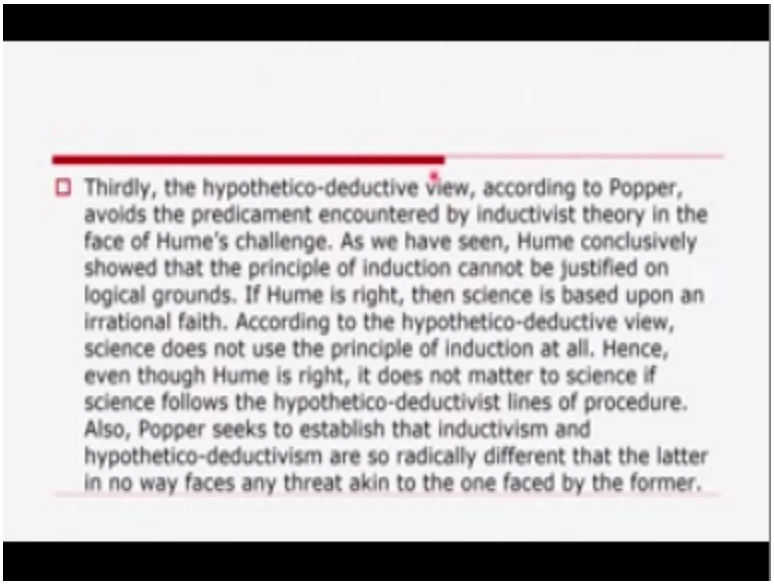

Thirdly the hypothetical deductive view according to popper avoids the predicament encountered by in the finished theory in the face of huge challenge that the tomb who wasn't in term I mean here is an inductive East as we have already discussed in the context of inductive ISM and the

way not he also tried to foreground certain critic of inductive ISM from within okay because of his disbelief in the school of hypothesis him.

And so as we have seen human conclusively showed that the principle of induction cannot be justified on logical grounds if you is right then science is based upon and is rational faith or animal faith that sort okay I have according to the hypothetical deductive view for popper okay science does not use the principle of induction at all hence even though he needs right it does not matter to science if science follows the hypothetical deductive lines of procedure also purpose fixed to establish that inductive ISM.

And hypothetical deductive ISM are so radically different that that the hypothetical deductive model in no way faces straight akin to the one faced by inductive ISM in this connection popper browse our attention to the logical asymmetry between verification the central component of the inductive scheme and falsification the central component of the hypothetical deductive okay I mean verification engine as propounded by inductive agent as well edge falsification regime propounded by the hypothetical deducting is decay and they're logically and in these kind of logical asymmetry that we are talking about they are logically a symmetrical.

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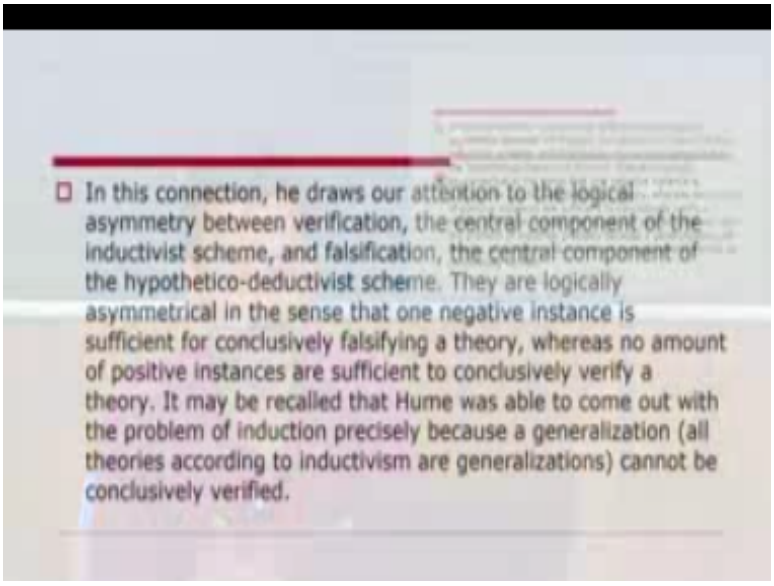

In the sense that one negative instance is sufficient for conclusively falsifying the theory whereas no amount of positive instances are sufficient to conclusively verify that it in the inductive is given you can go on and on in accumulating your observations observational instances

observational data still you can they still they are not adequate still those observational instances observational data are not adequate they are not sufficient to conclusively verify a theory that is why I was giving you the example all crows are black old may swans are wild all men are mortal you cannot conclusively verify this statement where edge where edge in the context of hypothetical deductive model okay.

Only one negative instance is adequate is sufficient for conclusively falsifying the theory in this context it may be recalled that not humorous able to come out with the program of induction precisely because a generalization I mean all theories according to inductive is emerge generalizations ok it may be recalled that Hume was able to come out with the program of Index and precisely because a generalization cannot be conclusively verified ok that's important then if hypothetical deductive model a is becoming the hallmark of scientific knowledge for the growth of science in the apparels schema then how does popper character scientific progress.

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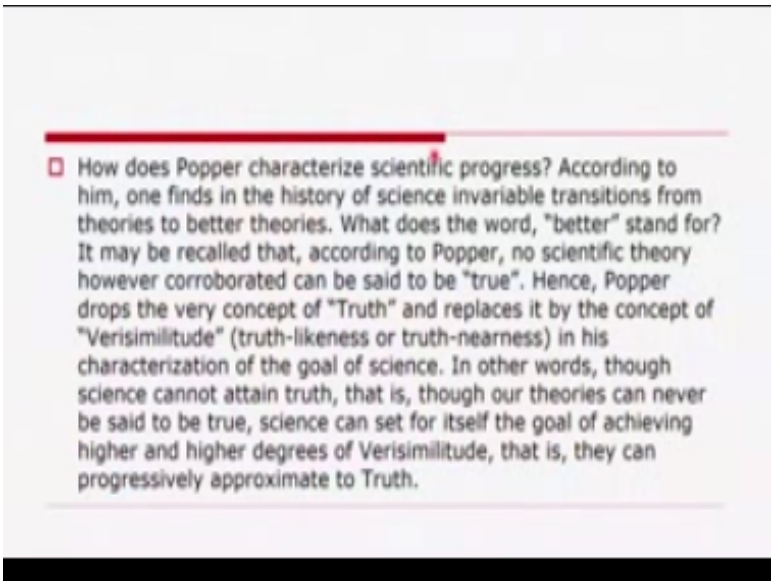

According to poppers one point in the history of science invariable transitions from theories to better ecology what does the word vector stand for it may be recalled that I mean according to popper no scientific theory however corroborated can be said to be true because we have to keep them permanently identity hence popper drops the very idea of truth because this truth also is not permanent.

This is temporary this is a corroborated one we have to keep the truth permanently tainted and popper try tries to replace the term truth by the concept of very similar tube I mean it is close to the truth truths likeness or truths nearness okay it is very close to the truth but it is not the truth when I mean he used this term very similar tube when he very suffer the characterization of the goal of science in other words to put it to put it succinctly.

Okay though science cannot attain truth that is through our theories that that is there any time cannot attain truth that is though our theories can never speak to me through okay science can set for itself the goal of achieving higher and higher degrees of verisimilitude I mean which are very close to the truth okay, truth nearness took lightness okay that is they can progressively approximate. The approximate okay I mean a complete conclusion that is why that this is a different story all together debate, all together whether that is the truth or not I mean that is the conclusion or not.

We already know multicultural world today, we always feel that no that must be multiple conclusions there must be multiple perspectives, there must be multiple cultures there must be multiple, this is how we try to interpret if you if you look at Weberian verstehen school of thought okay, I mean Vienna school of thought I mean able to find that even a will truth falsity okay they are also subject to good bad right wrong they are also subject to multiple interpretations.

Okay that is a different story all together but what I am trying to do by given by doing justice to what popper was trying to say about popper about concrete conclusion proper truth and he the way he replaces the media drops the very concept of prose and replaces it by the concept of very similar to okay truths likeness or truth nearness very close to the truth but not put it okay so in science we go from theory to better theory.

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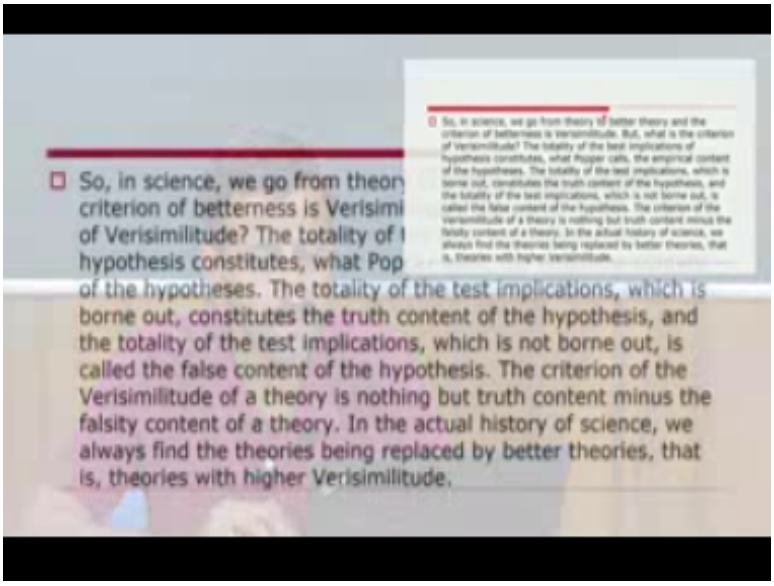

I mean which is very close to the truth very similarly to and the criterion of bitterness is very similar to what is better whichever is closer to the truth okay but what is the criterion of verisimilitude again this is the totality of the best implications of hypothesis the totality of the test implications of hypothesis constitutes what popper calls the empirical content of the hypothesis the totality of the test implications which is born out constitutes.

The truth content of the hypothesis and the totality of the pest implications which is not worn out okay is called the false content of status the criterion the criterion I mean what is the criterion of verisimilitude which are which we try to we are trying to address the criterion of the verisimilitude of a theory is nothing but truth content - the falsity content of a theory in the actual history of science we always find the theories being replaced by better theories that is theories with higher verisimilitude.

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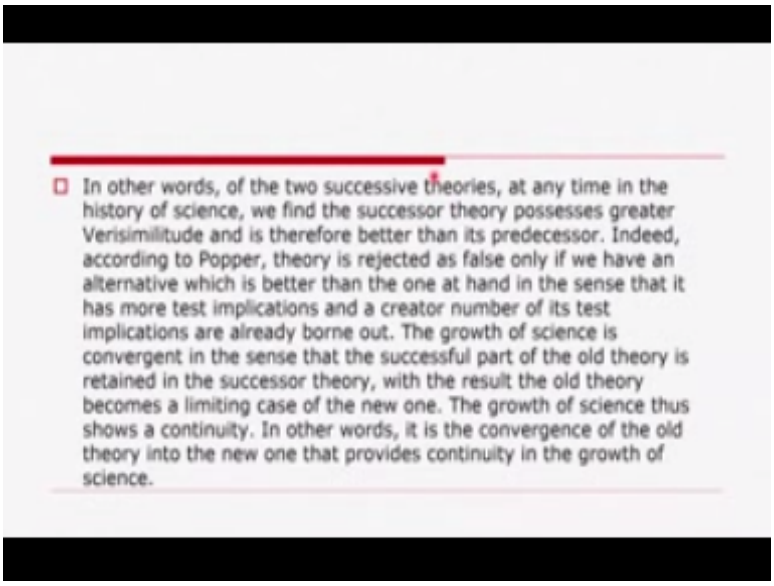

In other words of the two successive theories I mean theory and a better theory which is very close to very solicitude of the two successive theories at any time in the history of science we find the successor theory possesses greater very similar tube and is therefore better than its predecessor in indeed according to popper theory is rejected as false only if we have an alternative which is better than the one at hand in the sense that it has more test implications and a creator number of its test implications are already gone out the growth of science is convergent in the sense that the successful part of the old theories retained in the successor theory with the result of the old theory become becomes a limiting test of the new one.

The growth of science the source of continuous okay continuity from at theory to a better theory even that when that better theory becomes the theory will we get to know another better theory then the better theory itself okay which is very close to the truth okay I mean which possesses greater very similarly chilled okay it was it must constitute the elements of containment the in other word it is the convergence of the old theory into the new one that provides continuity in the growth of science according to power it is the convergence of the old one with the new it must also be remembered in this connection that unlike in the finished or positivist popper a journalist in this in the fence according to him scientific theories are about an unobservable world this implies that the real world of unobservable though can never be captured by our theories.

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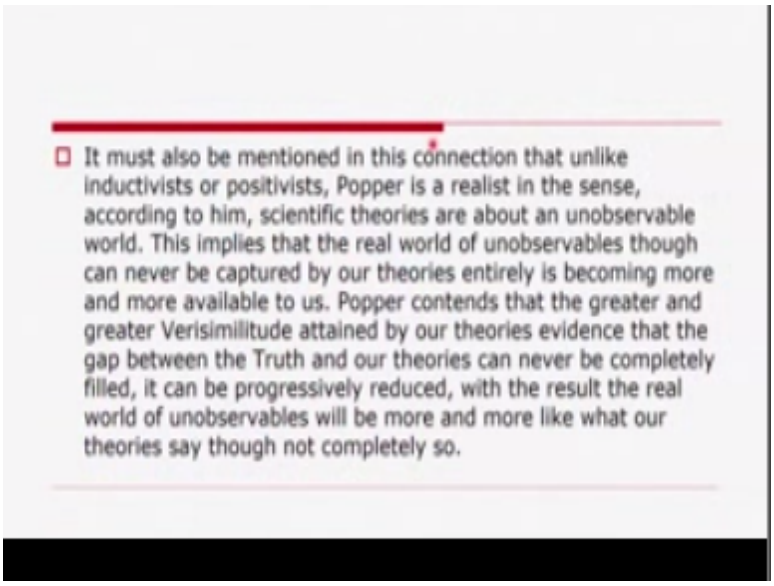

Entirely is becoming more and more available to us contains that the greater and greater verisimilitude attained by our theories now evidence that the gap between the truth and our theories can never be completely filled it can be progressively reduced with the result the real world of unobservable will be more and more like what our theories say now though not completely.

So this how does popper establish the objectivity of scientific knowledge he you see just like inductive East's hypothesis and positivist also try to make a demarcation between science and nonsense because for him also science is objectively now or date okay but how in the finished suppose so sought to establish the objectivity of science by showing that scientific theories are based on upon.

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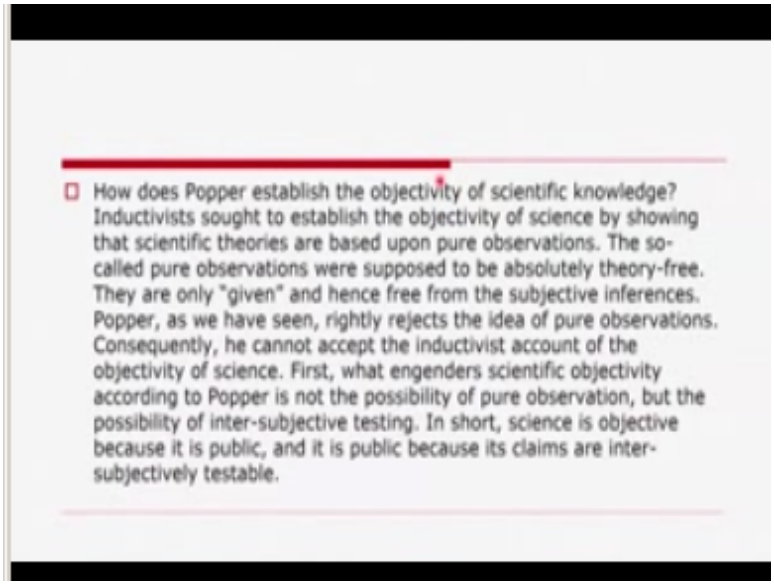

P or observations okay and both inductive edges and positivist the so-called pure observations were supposed to be absolutely theory free they are only given and hence free from the subjective inferences popper rightly as you have seen rightly reject the idea of peer of jealousies because our whatever observations are that we make are not pre supposition list okay consequently popper cannot accept the inductive East account of the objectivity of science okay what he does first he engenders scientific objectivity I mean what engenders objective is I mean what engenders scientific objectivity according to popper is not the possibility of peer observation but the possibility of inter subjective testing in Sault sciences objectives because it is public.

And it is public because it's closer inter subjectively testable I mean when inter subjective the possibility of inter subjective space ting comes up okay how no because science is public signs can be public l accessed and because and science is public it is and it is public because its Scales us inter subjectively testable secondly we are still with the notion of how opera tries to establish objectivity of scientific knowledge ok first one as I said the what engenders scientific objectivity according to popper is not the possibility of pure observation.

But the possibility of inter subjective testing ok secondly popper makes room for relative autonomy of facts or observations our facts our observations are also limited they are not absolute that is to say whereas of in distinguished considered observations to be absolutely theory free popper constrains them to be relative did theory okay he maintains that though one

observation must depend on some theory it can be independent of the theory which is tested in terms of it.

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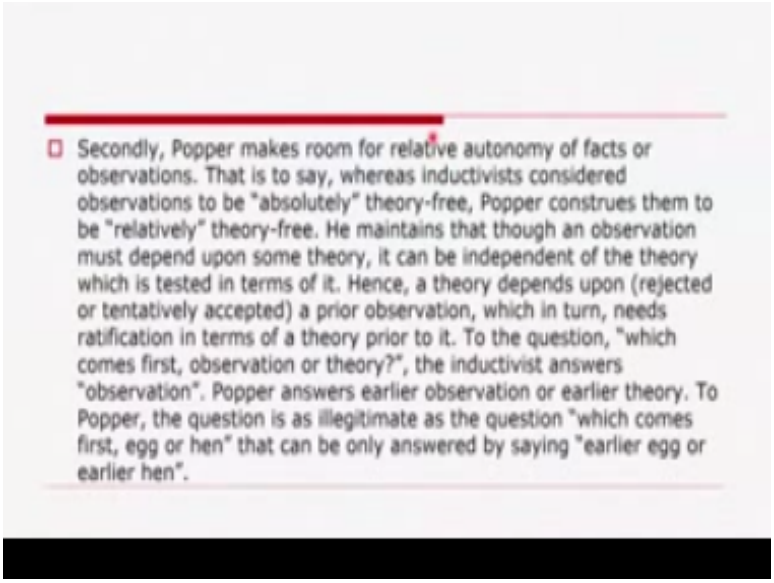

Hence the theory depends on a prior observation whether it is I mean the theory whether it is reject refuted or temporarily and tentatively accepted and incorporate result is refuted or corroborated okay a theory defensible of prior observation which in turn needs rectification in terms of a theory prior to it to the question which comes first observational theory the in distinguished immediately under you say individual observation is prior there is just unilateral relationship between observation and theory.

As we have already discussed in the positivistic Schema but popper answers are real observation or earlier theory okay that's right I said a theory depends on a prior observation to popper the question is as in legitimate as the question which comes first egg or hen okay that can be only answered by saying earlier egg or on your head.

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