Sociology of Science

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Lecture – 20
A Large Community, but Few Peers: A Study of the scientific Community in India:E. Haribabu

Dear students, today we will discuss professor E Haribabu's article, A large community, but few peers, a study of the scientific community in India. Prof. Haribabu was professor of sociology at Hyderabad Central University; his specialization was in the area of sociology of science. And this is an article in the field of sociology of science in India. So, this pap paper looks at the peer review system, the pattern of evaluation within the scientific community in India.

In the previous lecture, I discussed about the development or lack of development of science and technology in colonial India that is how the British policies affected the growth of science and technology in India. And or how conversely their indifference led to Indian science going backward, so that was a study in the history of science in Indian context.

Today, we will look at the pattern of evaluation in Indian Scientific Community in the post independent India. Prof. Haribabu wrote this article based on empirical work. This is a field work that he did at Indian institute of science Bangalore in early 90s. In fact, Prof. Haribabu spent 3 to 4 months at Indian Institute of Science Bengaluru from May to August 1990 interviewed the scientist working in different departments and different resource centers at the institute and came to the findings that we are going to discuss today.

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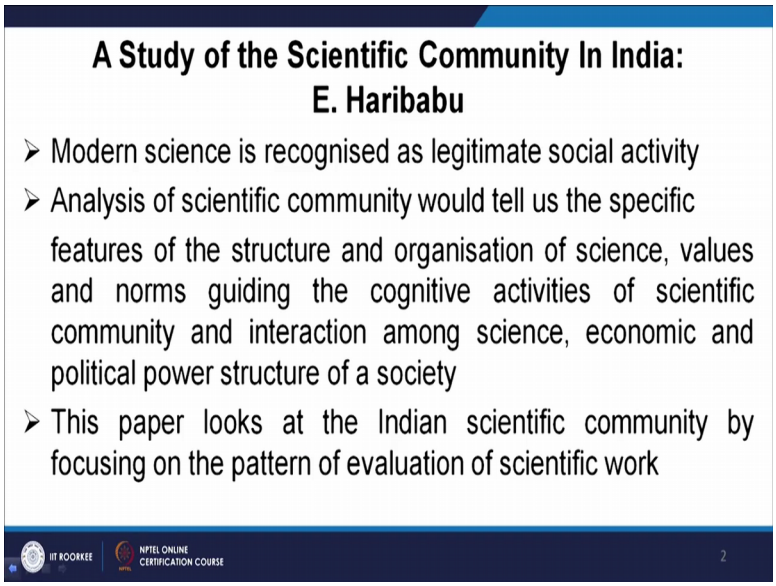

Now, he begins the article with a discussion of the role of modern science in contemporary world. He says modern science is recognized as legitimate social activity. Now, this point we have gone through it with reference to Robert Morton's article on ethos of science or Matthew effect in science or for that matter when we discussed scientist as an indexical reasoner by Karin Knorr Cetina. We know through the discuss ions in this course that science is a legitimate social activity. Science is routed to a particular social context the local conditions, the cultural factors, the social factors, the political factors, the economic dimension has a large bearing on the knowledge production within the scientific community.

We have seen that in case of na Karin Knorr Cetinas discussion on how scientist works as an indexical reasoner. We have seen with reference to Robert Martins article on ethos of science how there are certain institutional norms which are binding upon the scientific community. The scientific community more or less adheres to some of these institutional norms. And these institutional norms are basically, social in nature the norm of universalism, the norm of communalism, the norm of organized skepticism or the norm of disinterestedness.

It more or less determines the activity of the scientist within the scientific community; also we have seen in case of Matthew effect in science that how the social background of certain scientist. In other words, if a scientist is more eminent has made a reputation of

has earned a reputation for himself or herself within the scientific community; enjoys much more advantages in comparison to somebody who is a relative newcomer or somebody who is not that famous.

So, the advantages translate to things like getting published in a top journal getting an opportunity to deliver a keynote speech in a prestigious conference; finding it easy to get the grants to deliver to set up a state of art laboratory in attracting the brightest of students to your lab to your department. So, these are all social activities how the local conditions have a strong influence on the production of scientific knowledge in relation to Karin Knorr Cetinas discussion on how scientist is the indexical reasoner.

We know, how the local conditions, contextual factors, influence, choice of scientific problems, how the relationship with the senior scientist who have control over certain laboratory, certain resources have a bearing on what kind of research you are doing, what kind of findings you get, what kind of instrument you have access to, what kind of apparatus you have in the lab that also determines the kind of research problems that are selected. So, when Haribabu says modern science is a legitimate social activity, he is not wrong.

So, I in order to explain that point, I took you back to the classes that I have engaged in this course to talk about those points, where we have found that science is a legitimate social activity. Now, the analysis of scientific community would definitely tell us, the specific features of the structure and organization of science regarding the structure and organization of science we already know that Thomas Kuhn proposed a model of structure of scientific revolutions. He said the scientific contributions come in the phase of revolutions in from the form of paradigms and there is a when there is a paradigm shift we move from one scientific worldview to another scientific worldview.

In case of Karl Poppers discussion on methodology of science, we know that falsifiability, rather than verifiability, can be a criterion to decide whether a theory scientific theory or not right. So, values and norms which guide the cognitive activities of scientific community and the interaction among science, economic and political power structure are very well known to us. It is well documented in this course through different lectures, through different articles, different chapters of different authors that I

referred too. In particular this paper looks at the pattern of evaluation within the Indian Scientific Community.

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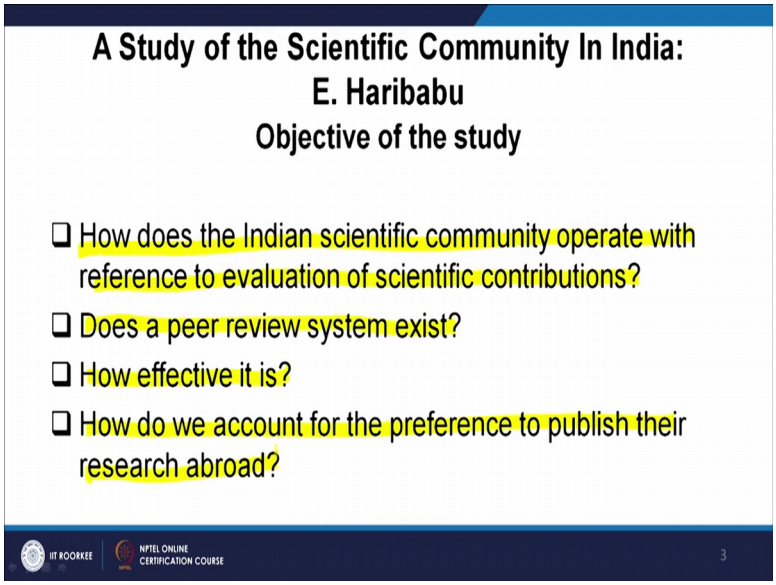

What are the objectives, the objectives are the following. This is the first objective how does the Indian Scientific Community operate with reference to evaluation of scientific contributions. Does a peer review system exist that is the second objective. There is a third objective which essentially assesses how effective the peer review system is, if it at all exists. Then the fourth objective of the paper is how do we account for the preference to publish our research abroad that is why Indians have this tendency to publish in foreign journals, what are the reasons for that what are the factors for that why Indian journals are not taken that seriously. Haribabu tries to answer this question address this issue.

Now, we know that Martin said the goal of science is extension of certified knowledge right and how is knowledge produced. Knowledge is produced by scientist making original contribution in their respective fields, then how do we know that the scientist is making original contribution. There is a process for that there is an institutional process to assess the originality of the scientific contribution made by the scientist and that process is the process of evaluation system it is a process of review process of peer review. There is a scientific peer who exists and the sign the peers. They review the work

of the fellow scientists the peers are mostly the contemporaries, who have expertise in that particular field of enquiry.

The scientific peer peers review the work of not only the scientists fellow scientists papers, but also they also review and assess project proposals submitted. Now, how is this review system working in Indian context, Haribabu says there has not been many works looking at the pattern of evaluation within the Indian Scientific Community. So, he undertakes a study to examine the pattern of evaluation within Indian Scientific Community. This is as I told you in the beginning based on empirical field work done in IISC Bengaluru.

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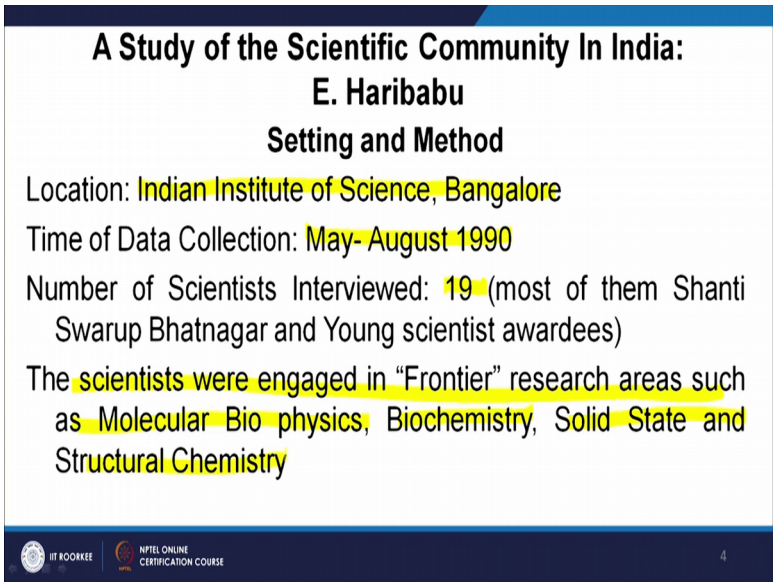

Now, let us look at the setting and method in a more detailed manner. He chose as I told you Indian institute of science Bangalore. The time of data collection was May to August 1990. So, he spent 4 months in the institute and spoke to 19 scientist working in different fields in different areas. This out of this 19 scientists, 10 were professors, 2 where associate professors, 7 where assistant professors. And one of the assistant professors was also a woman scientist and they are the people who worked in frontier research areas.

The scientists were engaged in frontier research areas such as molecular biophysics, biochemistry, solid state and structural chemistry. Mostly he took all the scientists who are working in this frontier research areas, because the sample size was small. So, more

or less he took all the people who are working in this fields in that institute. Now, we come to the findings arrived at by Prof. Haribabu based on his empirical work and he discusses the findings within four headings.

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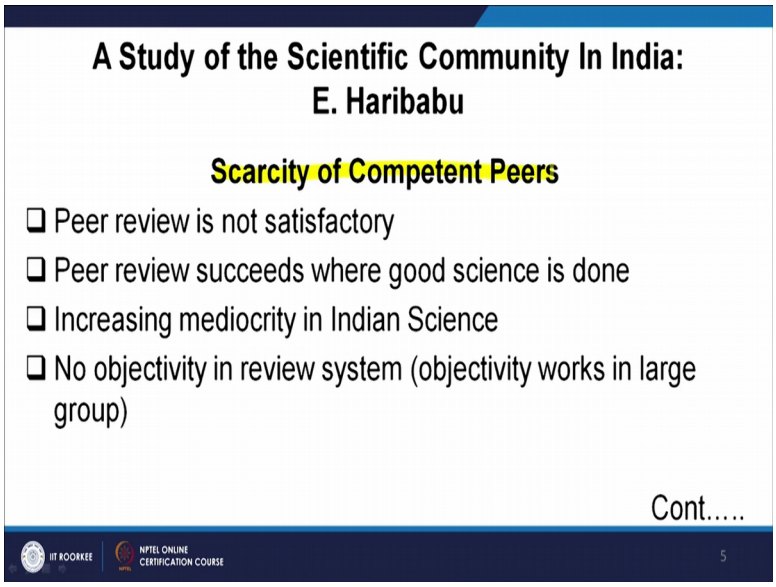

First scarcity of competent peers.

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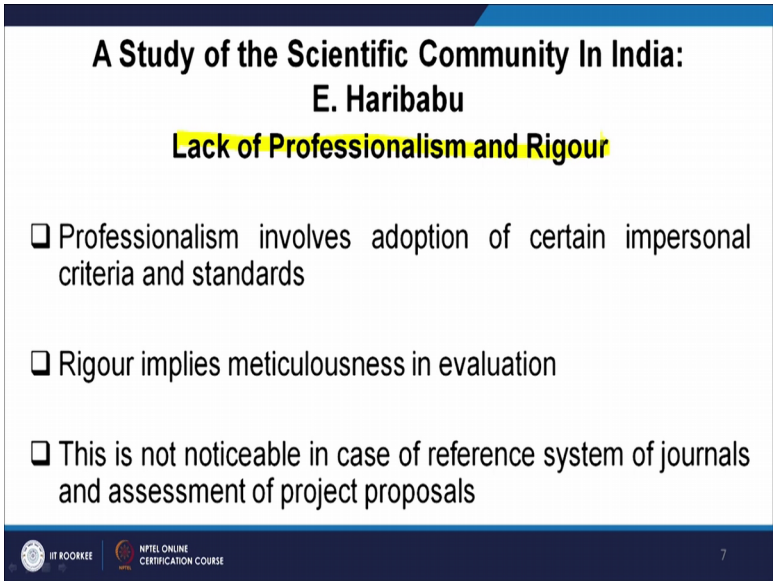

Second lack of professionalism.

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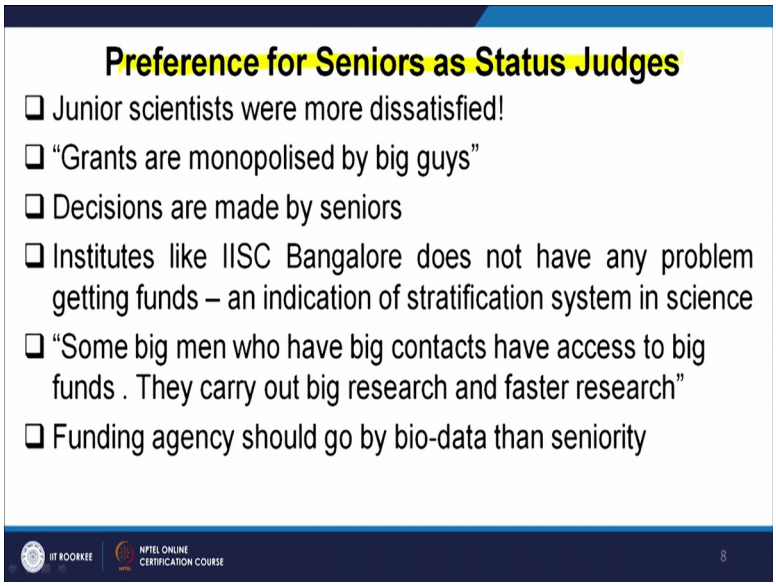

And we go third Preference for sa seniors as status judges.

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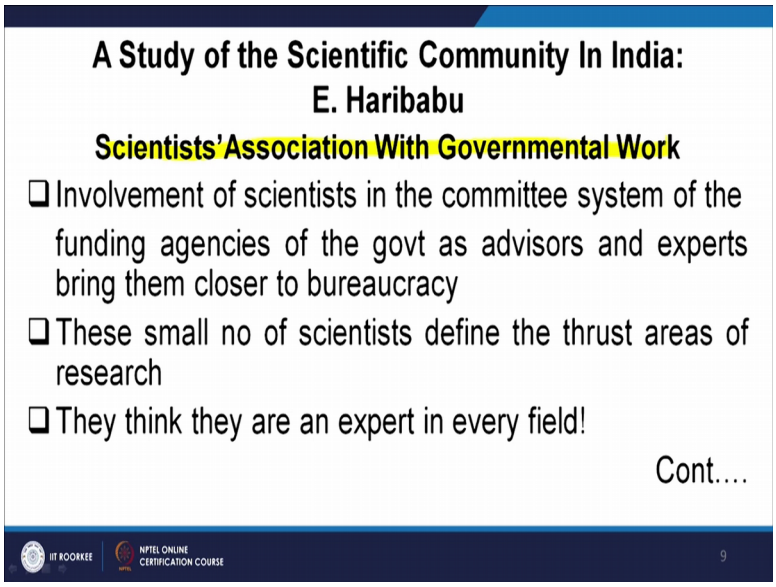

And fourth scientist association with governmental work. He began, his discussion by making the point that peer review system in India is not satisfactory, why, because, peer review system would work where there is good science. Definitely, it is absence of good science which makes peer review system, a difficult exercise in within Indian Scientific Community. Now, you know to discuss why peer review system does not exist, he talks about this four factors that I just highlighted. The scarcity of competent peers, the

absence of objectivity, lack of meticulousness, emphasis given to seniority in terms of decision making and the fourth one association of senior scientists with governmental agencies.

These are the reasons which leads to absence of good peer review system in India and consequently not good science is done in being in India. So, that is a point he makes why he says that is scarcity of competent peers. The first point which leads to or which is a factor accounting for poor review system. There is a large community as a title of the article suggests, but there are very few peers in Indian Scientific Community based on the study of IISC Bangalore in 1990s, Haribabu concludes that there is a large community, but are very few peers, there are very few competent peers, the very few people who have competence to review the papers, the projects from fellow scientists. This is a major problem particularly, he says in the frontier research areas that we just mentioned.

There is mediocrity in Indian science and there and that is mainly due to absence of objectivity. What is objectivity, the scientist do not evaluate the project proposals or the papers of the co scientist or the fellow scientist in an objective manner. They do not assess it in nonpartisan way not they do not assess it in neutral way, because the group of people who are working in a particular field within the India is small. Hence they all know each other, since they know each other, it is a personal dynamics that come into play when reviewing is done. So, it is the friendship or rivalry between the fellow scientist which has a bearing on the review system, since they know each other very well.

So, the personal dynamics come into play that is one, second is the many people who do not have expertise in a particular field are invited by the editorial board of different journals to evaluate papers, review the papers submitted by the co scientist or fellow scientist. Since, you are not an expert in that area and the number of people who are working in a particular area is quite small. Hence most of the people who are invited to the editorial board other people who do not have expertise in that field. So, they end up reviewing work in the areas in which they do not have much knowledge about that affects the peer review system.

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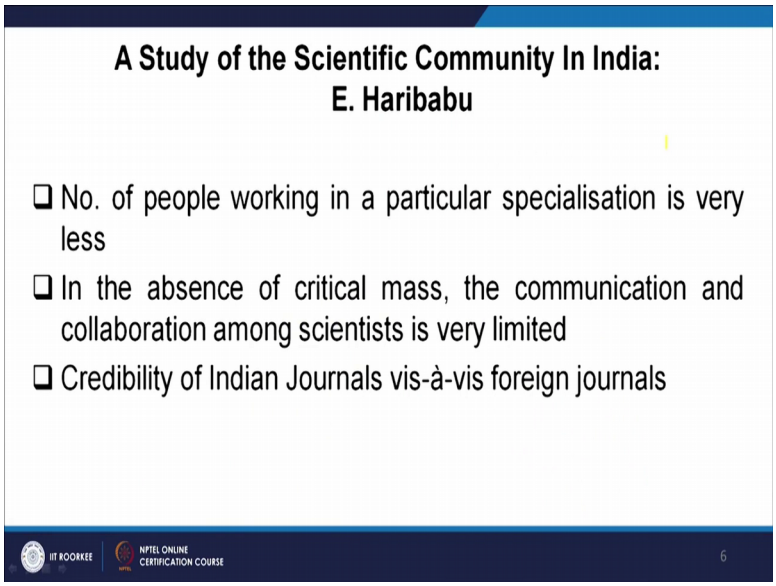

As I told you, number of people working in a specialisation particular specialisation is very less. So, in the absence of such critical mass the communication and collaboration among the scientist is very limited. Suppose there are lot of people working in your field there is a scope to interact with each other on a regular basis to learn from each other, to share new scientific knowledge with each other, to collaborate on newer scientific projects with each other. But that is missing and that is also one of the reason why one of the scientist who was interviewed said the good science is not done, because there is absence of effective peer review system and that leads to mediocrity in Indian science.

Now, linked to this issue is a point of why Indian scientists have this tendency to publish in journals outside India and mostly western journals either in Western European journals or in US journals. There is no denying the fact that the reputation and credibility of Indian scientist is based on their credentials and these credentials if it happens to (Refer Time: 21:00) if the scientist happens to have foreign credentials. The scientist is regarded as much better than many of the scientists who have done their research have done their PhD from Indian universities or Indian scientific establishments.

One of the scientist who was interviewed, he said that you see there is absence of critical mass that not many people who are working in my field in India. So, what do I do, I have to collaborate with scientist who are out working outside India and that way not only the chances of getting published in foreign journal increases, but also my chances of getting

promotion rises considerably. Hence, I prefer to work with scientist from foreign countries. I tend to collaborate with them much more than when the scientist who are from India.

There is another person who said that mostly when I get papers to review from Indian journals, it is peripheral to my area and when I do not have an expertise in the area why would I review a paper from that area. So, I decline and am quite happy because I get papers from outside India to review with which falls into my domain of research. So, it works two ways. At the same time, when somebody sends a paper to a Indian journal even if the issue or the theme that is tackled in the paper is of much relevance to India and a wider scientific community, it is not taken seriously by the fellow reviewers.

They think that this person who has sent this paper to Indian journal may not have been successful in getting his paper or getting her paper accepted by a foreign journal, hence the person has sent it to Indian journal. So, they tend to ignore such papers, they tend to take more time in assessing the paper. Now, this is a case which was highlighted by one of the scientists interviewed in the study. He said some time back I wrote a paper on the fuel efficiency of cooking stove in rural India; initially that paper got rejected by one of the Indian journals. Then I sent it to another journal and second journal they took lot of time to make a decision. Hence, I got in touch with somebody who is part of the editorial board and finally that paper got accepted.

You see in India, the political establishment as well as the scientific community, they advocate, the cause of working on issues relevant to India. Here is a paper which looks at the fuel efficiency of cooking best stoves in rural India, but it did not get the kind of attention that I felt it deserved. So, hence our prefer to work on things which are universal in nature; however, it would be easier for me to get a paper reviewed. So, this is the state of affairs which leads to a lower status being attributed to the Indian journals, and hence there is a tendency amongst the Indian Scientific Community to publish their papers abroad.

Now, the second point that he talks of regarding poor review system is lack of professionalism and rigour, how does he define lack of professionalism for him professionalism involves adoption of certain impersonal criteria. I highlight this point here and rigour for him implies meticulousness in evaluation, that meticulousness and

adoption of impersonal criteria is certainly missing in case of Indian scientist, because of all these issues of lack of critical mass, because of lack of objectivity, because of the issue that the scientists know each other.

Hence, the personal dynamics come into play and also to add to it there is this dichotomy that exists regarding getting published in Indian journals, the point that I just discussed. While the Indian scientists themselves do not take the Indian journals seriously at the same time, when the papers are submitted to the Indian journals the editorial board also do not take those papers seriously, because they think that the papers which has not been accepted by foreign journal has come to us. And the Indian jour scientist on that part they feel that it is always better to have papers published in foreign journals that will increase their credibility, and increase their chances of recruitment promotion as they do not send it, and even if they send it they if those papers are made with undue delay.

So, the third point that he discusses is the preference for seniors as status judges which also one of the factors, which leads to poor review system in India. In India, we tend to go by age and by or by seniority. Seniority is given primary importance, not the ability or the merit. If there is a possibility, that there is a senior professor moves into administration has not been teaching for quite some time is not involved in research, but he is holding an important administrative position in government scientific body and the person gets to review a paper or gets to assess a project proposal. It is quite possible that the person would not do a good job and that is one of the points that is raised by the particularly the junior scientist working at IISC.

They say decisions are made by seniors, grants are always monopolized by big guys. The big guys that is the seniors mostly managed to win the projects or they manage to grab the projects for their research collaborators or for their students just because on the ground of seniority and that is not a good practice in Indian Scientific Community. Funding agencies should always go by bio data then by seniority. Merits should be of consideration ability and competence should be taken into account.

One of the scientists interviewed said that since I am a relatively junior scientist, when I reviewed certain project proposals, and I approved some of the project proposals, it was finally denied, on what was not finally accepted by the funding agency on the grounds

that I do not have certain years of experience. If this is how, research is done an Indian Scientific Community then definitely we are looking at a bleak future.

Then the fourth point that he discusses here is about the scientist association with governmental work. Now, mostly it is the senior scientists, and few scientists who get involved with the government work that is they get involved with different committee set up by Government of India in relation to some of the scientific bodies. And since, there are very few people who have been serving on different government committees related to scientific body, they tend to dominate the decision mok making in the country regarding mostly acceptance or rejection of research proposals for funding.

These people a small group, a elite group, they decide which would be the thrust area of research in that particular year, in that particular discipline or department, when such kind of advertisements come up, they decide in the advertisement, they decide what should be the thrust area that scientists would write proposals on. And mostly this focus areas are their own areas. And that excludes many of the other upcoming new areas where scientists are already working, bright young scientists are already working, but they do not get a chance. Because they are the people the elite scientists were working with the government agency in different scientific bodies, they decide what should be the focus area that leads to lopsided scientific projects in India Indian Scientific Community. This sa small number of scientist they feel they are an expert in every field and that leads to certain unintended consequences.

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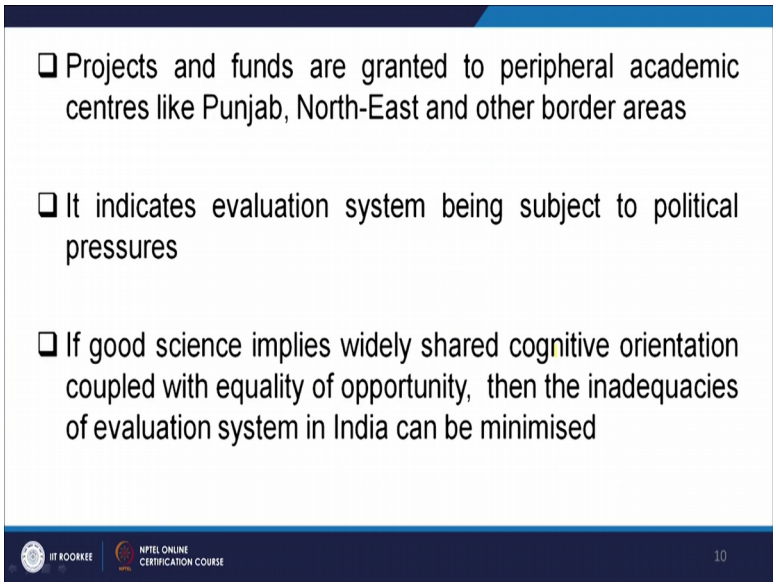

The quality of scientific work produced in India becomes mediocre. But at the same time there is also another point that that Haribabu points out which is based on the interviews is that many cases projects and funds are now allocated to peripheral universities, like Punjab University or North-Eastern Universities or other border areas, because it has some political implications. The Government of India decides that there should be some developmental work in the border area as in vulnerable areas like in the Maoist areas in central India or in the jum in the region of Jammu and Kashmir. Then some academic projects would be allocated to those scientists who are working in those areas. So, such political considerations far outweighs the academic merit is of the projects also and that also is one of the factors which leads to poor science, mediocre science being practiced in with an Indian Scientific Community.

Finally, Haribabu concludes that if good science implies widely shared cognitive orientation that the India that the scientific community should be guided by the ethos of science, the norms of science like, universalism like, disinterestedness like, communalism like, skepticism, then we can be assured of good quality of science being done in India. To add to it that also should be equality of opportunity where you look at merit, ability, rather than looking at age, seniority.

The scientific project should be evaluated objectively, it should be evaluated based on impersonal criteria, there should be meticulousness. Papers sent to Indian journals should

be also evaluated on it is merit and Indian jour scientist should also send more papers to Indian journals that would increase it is value and it is reputation and the impact factor and that is how good science is done and that is how Haribabu feels Indian Scientific Community can progress in future.

With this, we come to an end of this article and also this is the last class in this course. Hope you have enjoyed the lectures and you have learnt something new.

Thank you.