
Interview with Prof. Pradipta Banerji, Director of IIT Roorkee

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Professor Pradipta Banerji is the Director of IIT Roorkee, India. Prior to joining IIT Roorkee, he was a Professor of Structural Engineering at IIT Bombay. He graduated with a B.Tech. degree from IIT Delhi in 1981, securing the Director's Silver Medal as the top-ranked graduating student in Civil Engineering. He has been the recipient of the exclusive National Science Talent Scholarship in India. He then completed an M.S. (1982) and a Ph.D. (1987) in Structural Engineering from the University of California, Berkeley, USA, with a specialization in Earthquake Engineering. During this period at Berkeley, he was awarded the UC Regents' Fellowship twice, the prestigious Popert Research Fellowship, and a Distinguished Teaching Award.



As a Professor at IIT Bombay he has supervised the research work, in earthquake engineering and structural health monitoring, of 45 Masters and 12 Doctoral scholars, and published frequently in reputed research journals and proceedings in both India and abroad. He has been awarded the Excellence in Teaching Award at IIT Bombay. He has executed several sponsored and contract research projects for various organizations, including international ones. He has been an expert consultant to many organizations in India and abroad, particularly in the fields of Earthquake Engineering, Vibration Control, Bridge Design and Structural Health Monitoring. He has also been the Dean (Alumni & International Relations) at IIT Bombay and was responsible for leading all relationships with alumni of IITB and with our partner universities all over the world. This is his first interview after taking over as the Director of IIT Roorkee.

app2us: Professor Banerji, Thank you for granting this interview to app2us.com. Congratulations on being appointed as the director of IIT Roorkee.

Prof. Banerji: Thank you, thank you very much, and it is always a pleasure to talk to alumni.

app2us: After a distinguished career in research and teaching what attracted you to administration?

Prof. Banerji: Actually I am hoping that my career in Teaching and Research is not over :). I wasn't really "attracted to administration", but I thought that it would be a much better idea to take the hard way and change the way things work by getting "inside" the system, rather than take the easy way of complaining from the outside. In administration as the Dean (Alumni and International Relations) at IIT Bombay, I always wanted to be a facilitator rather than an administrator, and help to guide others in their quest for excellence, and communicate these aspirations to alumni and other research institutions around the world. I think that's why I got onto the other side of the street, so to speak.

app2us: What are your plans for IIT Roorkee?

Prof. Banerji: The prime objective is to bring back the glory days that the University of Roorkee once enjoyed, which probably got lost in translation during the change-over from the University to IIT Roorkee. For more than a century and a quarter, it was, without doubt, the best engineering institution in India. For example, at that time when US universities wanted to set up research relationships with institutions in India, they went to University of Roorkee and not to any IIT. It had the best faculty, the best students and the best facilities, and it still does in certain areas. However, ever since it's become an IIT, I feel, that somewhere along the way the concept that "Roorkee is a fantastic place to be", was not communicated effectively to the JEE and GATE incomers. Secondly, it faced locational disadvantages, in a pan-Indian sense. The metro IITs have always prospered, because of their locational advantages. I want to transform that so called "locational" disadvantage of Roorkee into a locational advantage by using a different branding tool. For example, I have already started communicating to the outside world that Roorkee is the gateway to the Garhwal Himalayas. It hopefully would attract excellent faculty and students, who prefer the quiet environs of IIT Roorkee for academics and research, while enjoying the great outdoors nearby, while being within four hours of the National Capital.

However, branding can only go so far, and unless there is substance, the initial excitement would not be sustainable. The substance requires excellence in three aspects.

First, but not necessarily the most important, is facilities. Facilities by themselves are useless if you do not have quality faculty and students, but facilities are important. Since IIT Roorkee already has fantastic facilities, the first thing to do is look at those facilities, and see how we can upgrade them to make them even better than they are from a research perspective.



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Second is the faculty. One of first things I would like to do is to spend half a day every fortnight immersed full-time in a department, find out any issues that are impeding the

progress of the department, and identify people who have passion. Sometimes people tend to make the mistake that only young people have passion, but I have seen senior people with a lot of passion, and all they need is an outlet for the passion. I want to get all these people with passion together and get them to work to make their own departments places that they would be proud to be associated with. Furthermore, I will try to attract new faculty; from past experience, I know that a lot of young and prospective faculty will join an environment where they can work well and further their own aspirations. This environment can be created by people at IIT Roorkee who have the passion to work towards making IIT Roorkee the best in the country and amongst the best in the world.

Third, and probably the most important, is the students. I would take a two-pronged approach here. One is for post-graduate/graduate students and the other is for UG students. The undergraduate students will come through IIT JEE, so the trick is to show the IIT JEE guys that Roorkee is the place to be to become the best that they can be. It is rather surprising, but 70 of the top 100 JEE rank holders opted for IIT Bombay this year, and more than 50% have been opting for IITB for the past few years. Why? Because, over a period of time, IIT Bombay has shown that it has a lot to offer to prospective undergraduates, such as undergraduate research opportunities and avenues for developing leadership qualities and other soft skills. A lot of prospective students go there not only because of the coursework, but because of the other things mentioned above. Today's students want to be all-rounders. I am confident we can improve the trend for IIT Roorkee, although this will take time. But the easier option is to attract the best post-graduate students. For this, we need to go out to some of the best undergraduate institutions in India, and present to them what IIT Roorkee can provide them in terms of excellent research facilities and faculty supervision. So once you start getting some of the best ones, it becomes a pattern, you get more post graduate students and thus more research money. It has a cascading effect, even in attracting excellent new faculty.

app2us: You have been the first Dean of Alumni and International Relations at IIT Bombay. How do you plan to leverage this experience to maximize the potential of Roorkee alumni worldwide?

Prof. Banerji: I used to wear both the alumni and international relations hats at IIT Bombay. A lot of people said that they were two totally different things, but I say they are not, as during my tenure I have been assisted by many of our alumni in establishing international links with academia and industry. One of the myths about the IIT system is that everybody from the IIT system goes abroad. I conducted a survey in IIT Bombay, and found that only 7500 out of the 32000 graduates are abroad. Thus, it is important to note that typically only 1 in 3 are abroad. But the ones abroad are the the ones who are seen and heard everywhere, especially in the media. They are also the ones exposed to a culture of academic philanthropy, and hence have the passion to give back to their Alma-mater. So, it is important to engage these alumni from the diaspora, and I think that it is important to get them excited about the vision that we have for the institute. If alumni see a vision, and see that you have a road-map for getting there, they are bound to become stake-holders in that vision. Alumni would always want to be alumni of the best institution there is. So, I want to leverage this with alumni from the diaspora and in India. One of the things I would like to do is to show alumni that if they contribute to the continued growth of

IIT Roorkee, in whatever form that they are able - not necessarily only money, it would be a win-win situation. Another aspect is to focus on alumni-centric activities. Come back, see your place, just be a part of it. If you are just engaged with your Alma-matter, that itself sometimes through serendipity creates various types of situations where it becomes a win-win for everyone involved. For example, if an alumnus works in a company, and he/she can convince the company to participate in research at IIT Roorkee, then Roorkee wins because it gets research facilities and faculty members get to work on challenging and interesting live problems, the company wins as the outcomes may be directly related and contribute to its objectives, and the alumnus wins because the company recognizes him/her as an important change-agent within the company.

In today's globalized world, no one academic institution can hope to solve any of the global research challenges on its own. Thus for IIT Roorkee, to leverage its internal excellence and be visible as an excellent global research institution, it will be almost be a requirement to be networked with global universities. Here, my personal networks with universities across the globe would become a vital cog in the wheel. Already, a group of Canadian and UK universities will be visiting in the next few months, to establish research links with IIT Roorkee.

app2us: IIT Roorkee has a unique Department of Earthquake Engineering. With your expertise in the area of Earthquake engineering, do you plan to continue your academic research at IIT Roorkee?

Prof. Banerji: I have interacted with the Department of Earthquake Engineering and its faculty members for quite a long time; in fact, from the time that I returned to India from the US. Although I was slowly winding down my research in earthquake engineering, as I could not find any more interesting theoretical problems to solve, with the excellent experimental facilities at IIT Roorkee, I may suddenly regain my lost enthusiasm. I currently do research in "Structural Health Monitoring". As far as my personal research agenda is concerned, I have been assured by the Chairman Board of Governors that I can continue my research and development career at IIT Roorkee, as long as it does not interfere with my Director duties. Research and development are my first loves, and I am taking my research group and my post-doctoral scholar with me to IIT Roorkee, to maintain the balance between academics and administration.

app2us: You have been involved with the Casa Buna affordable housing project of Arcelor Mittal. How does the steel housing of Arcelor Mittal compare with Tata's recently launched Rs 32000 housing project?

Prof. Banerji: Right in the beginning, let me say that "affordable" has many different connotations, depending on the economic strata that you are addressing. What is affordable for middle-class urban society, is completely out of reach for a lower-income group. One of the things that we did, when defining the problem for the Casa Buna project in an Indian context was that we would restrict our project to affordable, urban, residential apartments for middle-and upper-middle income groups in cities like Mumbai, Ahmedabad, Bhubaneshwar, made using steel-intensive solutions. Because Arcelor Mittal is a company, it was important to address a large market share segment. The market today in the organised urban residential and semi-urban residential projects has the major share of

financial outlays in India. The Tata initiative is laudable, as they are trying to show that steel-intensive solutions can also work for low-cost housing. Since steel fabrication is quite expensive in India and we do not still have grass-roots fabricators in steel, I am reasonably sure that steel as a low cost housing material is probably not the best option in the current environment in India. So a simple answer to your original question, is that the two projects address two different economic strata, and are thus very different in their objectives and outcomes.

app2us: Top US universities have much higher focus on research as compared to IITs. What are your ideas to enhance the research output at IITs.

Prof. Banerji: Let me answer this question in two parts. You say that today US universities have much higher focus on technology research as compared to IITs. But let me remind you that the technology research emphasis is a relatively recent phenomenon in US universities, starting in the 1940s. The



reason is that during the second world war technology was required to win the war, and post world war, there was an economic boom in the country, so society needed technological solutions. Research in US Universities even today is geared towards providing technological solutions for US companies. And as a corollary publications and all other research output happen. The system in US universities value innovations and have a system of comparing technology development favorably against research publications while considering faculty impact. So the focus is not on research for the sake of research but on finding technological solutions to meet society's demands and needs. There is always going to be "blue sky" research in the basic sciences and associated research metric of journal publications, but a large no. of people in the applied sciences and engineering focus on research that has primarily a technology development output, which is why you say they have an innovation culture.

In India, popular folklore talks about research at IITs being low-impact as we do not have enough publications in high-impact international journals. Do they have any idea what they are talking about at all? Does anyone question the validity of the premise? Let me ask a question. Will India become a great country with all its problems solved if we have more publications in international journals than China and USA? There are two important issues with the above premise: one, why are we short-changing our national journals by focusing on international journals? It is our responsibility to increase the impact-factor of our national journals, by publishing important papers in them. Second, and more importantly, shouldn't we laud the IITs for developing technology with a direct social impact in an Indian context? Shouldn't we judge the IITs by the social and industrial impact of the technology being development for India? What we really need is to understand the wants and needs of society and industry in India that require technological solutions. What the IITs should focus on is those aspects. For example, if we come up with innovative solutions for adobe structures to be adequately earthquake resistant, it would be a huge service to rural and semi-urban society. Thus in an Indian context, technology research should include

innovations in technology that have an impact on society and industry, where publications are a corollary.

app2us: How was your experience at UC Berkeley?

Prof. Banerji: Unequivocally, an unforgettable experience. Let me add that when I was at IIT Delhi, I had no idea that UC Berkeley was the top university in engineering. My friends informed me about Berkeley and I was fascinated. Fortunately, UC Berkeley gave me a scholarship and I went there. Otherwise, it would not have been possible. The San Francisco Bay Area is the best place on earth in terms of weather, in terms of the liberal attitude of its people, and the fact that when I went to the structural engineering division of the department of civil engineering, every faculty member was a who's who of that area. People who we had heard about, people who had started subjects, all were there. Just being taught by them was an amazing experience. Those were some of the best years of my life, and I have been indelibly molded by that experience.

app2us: What did you like the most about the US Education system?

Prof. Banerji: Openness and flexibility. There is no dogma associated with anything. I almost did a Masters in Physical Education while I was doing a Doctorate in Engineering. I also learnt French. Even though I was working in one area, I could take courses from other areas. You can't do that routinely in India. This flexibility built into the system helps create well-rounded personalities rather than people with a one-dimensional knowledge-base. And another thing that I saw and experienced was that students are treated as equals. The relationship between the teacher/supervisor and student was not like knowledge transferer and transferee, but one of fellow journeymen working towards a common goal. Even undergrads could do research. Those are the things which are the cornerstones of the US education system as it existed in the 80s. Today it is getting closed. Today boundaries are being put up due to high costs of education. However, the flexibility can be incorporated in the Indian Education system also.

app2us: What is your message to the students planning to study in the USA?

Prof. Banerji: Study in the USA, if you get a scholarship or can afford the high cost of education. Although the standards are showing a dip because of many years of reduced funding from state and federal sources, it is currently still the best education system in the world. Study there and imbibe the best from that system. Then return to your country and try to apply in an innovative manner some of the things that you have taken away from the US system.

app2us: Professor Banerji, we are very thankful for your time and we wish you great success as the Director of IIT Roorkee, and beyond.

Prof. Banerji: Thank you very much. It's been a pleasure talking to you.

(The original interview can be accessed at www.app2us.com)