

Prospects for Intelligent Imagination (by Anurag Gupta)

I would like to begin by appealing to my incompetence to provide visionary prescriptions for the future of a research institution of high national importance. But, given this opportunity, I can indeed share a few viewpoints as well as some personal experiences which might provide policy makers with some pointers from a young faculty.

Having said this let me begin by expounding on the title, thereupon using the idea as the basis for building the content of this talk. The title is inspired from one of the prophetic lectures by Percy Williams Bridgman. Prof. Bridgman, in reference to the tasks before a responsible society, points out two indispensable virtues for any meaningful progress. These are intelligence and imagination. Intelligence, as “fortified by education”, and “the imagination that can sense the significance of the simple underlying processes and relationships that are so easily lost to sight under the ever-increasing complexities of modern life”.

In the present day scenario research universities provide us with rare opportunity to live up to these virtues while maintaining “intellectual honesty”. In addition they also provide us with avenues for closer scrutiny and existential debates, something which cannot be pursued in an otherwise shallow institutionalization. However in pursuit of excellence, a research university cannot attempt to either emulate a glorious achievement from its own cultural past or a contemporary model of success from other cultures; therefore it should neither try to become Nalanda nor MIT. In doing so, the institution not only loses the above mentioned virtues, but also a distinct identity which is most important in the matters of intellect.

My talk is roughly arranged in two parts: In the first part, I would like to put forth my impression of a research university with particular emphasis on the role of the faculty. Most of my understanding is built upon a must-read article titled “the role of the professor” by Walter Noll. After making my position clear, I would next attempt to highlight some of my expectations and concerns as a young faculty member. My criticism, if any, should be seen in an optimistic spirit with the understanding that such pointers are solely for my concern over the progress of this institute.

Let me now put down a few thoughts on the nature of a research university. A research university is neither a purely teaching institution nor a dedicated research laboratory. It is a system, unlike schools and degree colleges, which is expected to impart knowledge while constantly doubting its validity and relevance. It is a system, unlike scientific laboratories, where there is no imminent pressure to produce the state of the art, whatever it takes. The position of a research university is perhaps best understood by looking at the role of its faculty members. This in turn calls upon us to understand the distinction between a teacher, a researcher, and a professor.

According to Prof. Noll “the teacher's task is to convey a fixed body of knowledge to his students and to worry about the best way to do so. He normally follows a textbook

and a syllabus. The professor's focus is on his subject... He recreates the subject in his mind each time he lectures on it... He always tries to find a new approach to and better insight into the subject of his course. He almost never gives a course twice in the same way. The researcher's focus is on the discovery of new results. He is the creator of new knowledge. His nightmare is to get stuck in his search or to learn that what he has found has already been discovered shortly before by somebody else. Priority is very important to him and will sometimes induce him to rush into print prematurely. The professor's focus, on the other hand, is on understanding, gaining insight into, judging the significance of, and organizing old knowledge. He is disturbed by the pile-up of undigested and ill-understood new results. He is not happy until he has been able to fit these results into a larger context. He is happy if he can find a new conceptual framework with which to unify and simplify the results that have been found by the researcher. Before going into print, he lets his ideas ripen. Priority is not an issue for him.”

We indeed play all three of these roles as a faculty member of this research institution. Some of us might of course excel in one role than the other. As an institution however no improper emphasis has to be laid on being a teacher or a researcher exclusively. Most of the young academicians in US are in some way pushed to become a good teacher: so that good evaluations may come his way; and a good researcher: so that the respective institute can generate funding for its sustenance. This position is very harmful and it eventually leaves no space for practicing one's professorship, in addition to turning the institution into a market place. “Without influence from the professor, the teacher's curriculum would soon become more and more outdated and lifeless. Without listening to the professor, the researcher would soon become a narrow specialist who loses all contact with the rest of science. It is impossible to be a good teacher without being at least a little bit of a professor in the sense of having some passion for the subject. It is impossible to be a good researcher without being somewhat of a professor, because research cannot be good unless it relates to something larger than itself.”

Let me now turn to some of my expectations and the resulting concerns as a young faculty who wishes to practice not just teaching or research, but also professorship. First, let me take up the issue of Ph.D. students. In two years of my academic experience, my most significant academic growth has occurred in my interaction with my doctoral students. A dedicated intellectual activity compulsorily requires a small group of “intellectually honest” individuals and once formed nothing else can be a bigger pleasure. I am personally convinced to build a strongest case for our Ph.D. students. I graduated from a university where Ph.D. students were considered the most valuable assets. It was neither for an attractive stipend nor for cushioned laboratories that students choose to go for the best Universities. It is for the vitality of the environment within which they are nurtured and valued. I would like to point out that, barring certain exceptions, neither Undergraduate nor Master students can be looked upon as possible substitutes. I would be glad to see sweeping changes in the way we treat our Ph.D. students. To begin with we can promise them a decent office space and

a more attractive residential space. Moreover, we have to begin trusting them like junior colleagues and see in them the future of this institute.

Secondly, I would like to touch upon the delicate but most important concern of transparency. IIT Kanpur has given me a most satisfying academic environment and has given me the best possible infrastructural support. I have been able to develop and teach courses in an independent manner which in turn has added greatly to my understanding of the subject. However, the issue of transparency both within my department and outside it persists to bother me. For example, we require a transparent and organized mechanism to monitor the ways in which space is used for academic and non-academic purposes. We need to be responsible and answerable to a wider community affected by our campus. An overall transparent system is utmost important for the health of an Institution.

Thirdly, I would like to see a growing emphasis on “Indian” ways of understanding and developing knowledge. There is a urgency to bring the subjects pertaining to philosophy and history of Indian science within the purview of our current education. Moreover, we need to assimilate our traditional knowledge systems (music, art, medicine, etc.) with our current scientific practices.

Finally I would like to raise an issue which, although not directly related to the academic performance of an Institute, can be of significant important as far as IIT Kanpur is concerned. I am putting forth a case for the spouses of faculty members. It should not be surprising to anyone of the poor working opportunities available outside our campus in Kanpur city. This is increasingly becoming a matter of high concern for newly married faculty members, in particular for the spouses who have little option other than leaving their established job if they wish to live with their partners. But what can we expect from our Institute in this regard? To begin with, it would be greatly appreciated if we consider the seriousness of the problem and consider it worth an issue for Institute’s future. Furthermore, we can form a little cell in the faculty affairs office which can help/guide our spouses with possible opportunities within and around our campus.

“The only progress is to doubt of progress” (Nicolas Gomez Davila)

References:

- [1] P. W. Bridgman, *The Task Before us*, Proc. Amer. Acad. Arts and Sciences, 83, 97-112, 1954.
- [2] W. Noll, *The Role of The Professor*, <http://www.math.cmu.edu/~wn0g/RP.pdf>.

A brief bio sketch

Anurag Gupta received his undergraduate degree from IIT Roorkee and his post graduate degrees (Masters and Doctoral) from University of California, Berkeley. He is currently an assistant professor in the department of mechanical engineering at IIT Kanpur. His research interests are in the areas of defects in solids and irreversible thermodynamics of a continuous medium.