

The invisible scientist in India

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Indian science, we're told by our mandarins, is in crisis; most young people no longer choose a career in the basic sciences in India, and those who do escape to the west as quickly as they can. Less well known outside the profession is that mid-career scientists too, are looking – westwards, to industry and to private educational establishments. The good and the great are agreed that unless this growing scientific vacuum is filled, India's knowledge economy will be at risk, and its current emergence short-lived. The last years have seen a plethora of measures to stem this tide, with a lot of publicly voiced concerns. Many scientists are somewhat bewildered by this sudden attention to our profession – in the same way as creatures who are used to the pale light of the nether-world blink on first exposure to bright sunlight. And many of us feel that it's time that we were *asked*, rather than told, what was wrong with our professional conditions.

We're often told (in near-reproachful tones) that today's scientists aren't as 'dedicated' and 'monastic' as they once were, that their salary levels concern them more than their vocation of choice. While this point of view has some truth in it – after all, we didn't click 'Yes' in the box marked "Ascetic" when we applied to join scientific careers – it's far too simplistic to be the entire truth. I'd like to submit, with due humility, that a major reason is that scientists on the ground feel *invisible*, disconnected from the powers that govern them, and estranged (by virtue of esoteric specialization) from society around them.

The prototypical science institution looks drab and is dingy, with sanitary facilities that rival those in Indian railway stations; small wonder that its inhabitants typically see themselves as disempowered and undeserving. Diversity of research or personality are often frowned upon, where those who don't meet self-generated stereotypes or work on subjects that have been hammered to death, are labelled as 'dilettantish' or worse still, 'too independent'. In the still predominantly male corridors of science departments, one can still hear old saws like "It's no good hiring girls, all they do is prepare to get married" or, "Of course no one listens to a woman's seminar – all she needs is to look good". These remarks are, in fact, only the thin end of the wedge; flies on the wall in after-dinner conversations among the big boys at scientific meetings would hear far spicier tales of predator and prey, with the reassuring consensus that the latter fully deserved what they got.

Hierarchy is alive and well in science institutes, and sycophancy acts as a good lubricant in career advancement, in reassuring agreement with the rest of our society. It is rare to find research teams where juniors can freely contradict their seniors in ways that are essential to the scientific temper; dissent is, after all, the beginning of discovery. This leads to individual, rather than collective, successes by Indian scientists, and a consequent lack of real impact on global platforms. Another paradox concerns international contacts: on the one hand, independent foreign collaborations are often frowned upon (the grapevine has stories about a major prize being withdrawn from its

recipient because of his foreign collaborations), with their protagonists being accused of 'seeking out white skin', and occasionally being denied leave and funding by envious science managers. On the other hand -- and not surprisingly -- the latter often preside over scientific call centres, where armies of students and postdocs do the number-crunching for international projects, without having the least idea of their overall scientific design. Small wonder, then, that apolitical, productive and independent scientists feel powerless and invisible in such a system.

This harsh-sounding analysis of course needs to be put into perspective. Indian science is no more and no less than a microcosm of Indian society, and all that I've said above would come as no surprise to many people in public sector-related professions in our country. Also, India is a country of contrasts, so that these statements need to be seen as representative of the average; glorious exceptions can and do exist, but only prove the rule. There are institutes in our country where quietly elegant buildings, designed by master architects, nestle in the shade of thousands of trees, where faculty offices have ensuite bathrooms; where all the faculty arrive in a team, and make terrific impacts, at international conferences; where the flow of students and postdocs follows the direction of knowledge rather than pre-assigned geography; where faculty meetings are lively, and their vigorous debates about pay, hiring, and research conditions are splendid examples of Indian democracy at its best. Scientists, both junior and senior, feel valued and visible, and proud of their ability to make a difference, in these stellar institutions; the only trouble is that there aren't enough of them.

How can the bulk of India's still-invisible scientists be made visible? Not simply by throwing money at the problem via ever-increasing science budgets -- but, for example by a more equitable distribution of resources in *every* such budget. Dialogue has to be encouraged -- between administrator and minion, supervisor and student, politico and ordinary scientist; the plurality of culture and diversity of backgrounds that we in India are blessed with, can only be a strength in today's globalised world. International funding should be accessible on a peer-to-peer system, instead of on the top-down basis that renders contact with the outside world a luxury for most non-networked, 'invisible' scientists. And most importantly -- Indian science needs to learn from Indian industry, which has been the vehicle of India's emergence, and worked with the same raw material to produce *very* different results. Can we look forward to science institutes of the future which are joint public-private sector enterprises, where the high-productivity, high-reward culture of India's best industries is replicated?