Illustration by Piyush Udai., Fifth Year Mechanical Engineering

Queen's Flower

As we leave the equinoxal sun behind and the air heats up sharply, most of our flowering trees are in a mood only to make things worse, putting out blazing red and yellow flowers that palpably amplify the heat. There are notable exceptions, though: trees that cool the eye by clothing themselves in blues and purples. The jacaranda, absent on campus, is one such; another is the Queen's Flower, or Pride of India (Lagerstroemia speciosa), fairly common here. Lagerstroemia is also one of those that puts on its foliage of long, ovate leaves in tandem to its flowers, so cooling things further. Its leaf canopy is roughly oval, and its flowers sprout in upturned panicles at the tips of its branches, so when in full cry it calls to mind a crowd brandishing a hundred conical flares of lavender or blue or light purple (different varieties have their own unique shades), the whole display making an arresting sight. On inspection the flowers turn out to be surprisingly frail, their petals thin and crinkly, lending the tree its third name, the crepe myrtle. Later, when the flowers have played their part, they fall while still whole and fresh, now calming the ground as they had earlier calmed the sky. Look out for these trees, presently in bloom, along our central avenue (e.g. along the H11-H8 stretch) and at other places where they have been planted in small rows, such as in front of the CRNTS-SAIF complex.
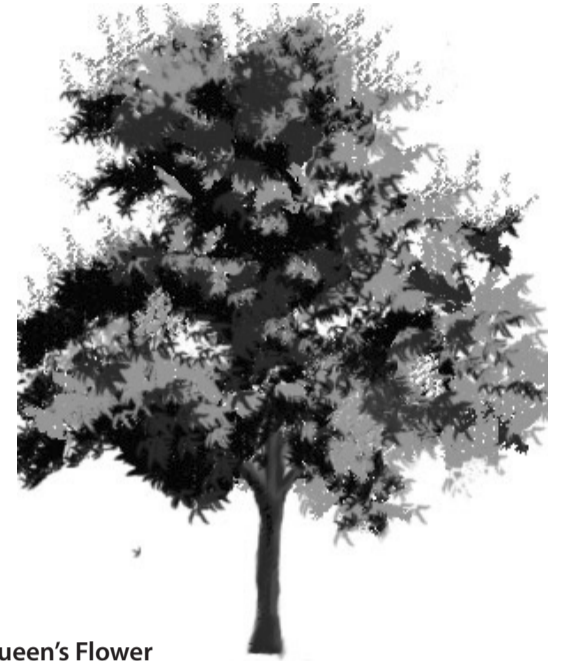
Illustration by Roma Singh, IDC

PERSPECTIVE

Technologists for a Better India: From an Instrumentalist to a Humanistic Path

■ Foundation Day address by **GOPAL KRISHNA GANDHI**

*G*opal Krishna Gandhi, grandson of the Mahatma, diplomat and erstwhile governor of West Bengal was at IIT Bombay as the Chief Guest for Foundation Day. He spoke with passion and erudition in a speech that was truly inspirational. For him, Foundation Day at a place like IITB should look at technology and its applications in a foundational sense where technology can see itself in ideational terms not just in technological terms. Technology then would move beyond its vocabulary to have a voice so that it is not just an instrument, but "an attitude, an approach, a path that poses alternatives…". His contention that "a technologist is a counsellor, not a courtier whether to the State or to corporates. The

technologist has to partner planning, not implement orders mechanically. This means that a technologist must therefore be an unflagging observer of the human condition, not just the technological scene" places an almost moral responsibility on technologists and institutions such as IITB. His thought-provoking essay is very much in line with the theme of this issue and powerful enough to take pride of the place at the cover page. For all of you who missed the talk we have reproduced his speech below, and hope that it is not just food for thought but action as well.

Introduction by **DAMAYANTI BHATTACHARYA**

Esteemed Chairman, Dr. Kakodkar, esteemed Director Professor Khakhar, Professor Sukhatme, Professor Contractor, members of the faculty of IIT Bombay, students, alumni and distinguished invitees, award-winners and members of their families,

I thank IIT Bombay for its extraordinary generosity in asking me to give this year's Foundation Day address.

For one who is not a scientist or a technologist it requires more than courage to address an IIT audience. It requires supreme courage. Sometimes such courage comes by a fluke. May that transpire today.

Inside

Technologists for a Better India

And in the fifteen minute challenge ahead of me, may the rare gifts of brevity in speech, clarity in thought and simplicity in expression happen as well.

Foundation Days are not about the 'day' or days; they are about foundations. They are about founding, start-ing, commencing. They are about establishing, about groundwork. They are about what in Hindustani is called buniyad.

The Foundation Day of an IIT must therefore trigger thoughts about technology and its applications in a foundational sense.

When we use the word 'technology', we think of some-thing tactile, even mechanical, something heavy, an installation. But if we think upon it, technology is as subtle, as delicate and fragile a construct of the human mind as any human thought. Arising in the human mind as an idea, a technological process starts off as an idea, in fact, as a 'mere' thought. The aggregation of ideas for materially fabricated processes and applications, when it goes beyond formulation to fabrication, becomes 'tactile technology'. We ought to remember that behind 'tactile technology' there lies a 'tensile technology' that is supple, that can change shape – its own and that of its context as well. So, at their core, technologies are ideas that have been given a structure and a form to create further structures and forms. And there, as an idea or a body of ideas made tactile, technology belongs to the realm of thought no less than philosophy or linguistics or logic. Its particular family in the world of thought is the family of ideas that are solution-ideas, that are, in fact, solutions. The technological idea is provoked by a 'problem' that seeks a solution. The so-called problem may belong to the realm of abstraction or it may relate to tangible real-life issues. Be that as it may, technology is, basically, about the mind grappling with a prob-lem that seeks a solution, a technological solution and coming up with an idea.

It follows therefore that technology evolves not merely in terms of its assembled sophistication, but also in terms of an ethos. There is an ethos to tech-nology asmuch as there is a design to it, and a utility to that design. The solution, as it proceeds from the starting'station' of an idea passes through several other stations like a train moving from say, Churchgate to Virar through Marine Lines, Charni Road, Grant Road, Mumbai Central, Mahalaxmi, Lower Parel, Elphinstone, Dadar, and so on. These stations on a Techno-Idea's route include the intermediate stations of Do-ability, Desirability, Liability, Practicability, Possibility, Feasibility, Suitability, Sustainability, Viability until the Techno-Idea reaches the technological equivalent of Virar, the end of its journey, namely, Actuality. That terminal, Actuality, sometimes brings happiness and sometimes, misery.

I would like to suggest that technology must therefore examine its ethos for an inner monitor that gives it more than a vocabulary, which it has; that gives it a voice, which it seems so badly to lack.

That ethos, that monitor, that voice would ask: Putting together the major technological journeys that India has undertaken, what is the mega-station that they have reached? Have the solution-ideas that began free India's technological journey, reached their destination?

Our achievements are there for all to see. Taller than the highest altitude attained by our space probes, deeper than the furthermost of our plumbings of the ocean's floor, wider far of reach than our station on the Antarctica, is the sheer audacity of our technological accomplishments. That so many of them have been entirely our own, conceived and crafted by ourselves, by Indian minds and Indian hands, against the heaviest of odds, is a matter of pride. That transmissions from our satellites make us steer our farming and fishing, make us connect to each other through an intricate mesh of mobile telephony, that make us take to the microchip, the semi-conductor and the laptop – and they to us – like no technology has ever meshed into human society, is a wonder of wonders. That our death rate has plummeted, that our life expectancy at birth has therefore shot up, that tools for overcoming ignorance and illiteracy and therefore superstition and prejudice have spread across our ancient land and are riveting our young is in no small measure, due to the technology back-up for the initiatives behind all those signal attainments. That Indian manufacturing bur-geons, that India's roads never rest under the rumble of wheels transporting goods and services, that when war – infamous, unlovely and unwanted by us – is forced on us we are able to leverage our arms and the means of transporting the engines of self-defence across desert, mountain, marsh and sea to halt ill-designs is again, at its core, a triumph of technological support to the national will. That the ancient chakra, Asoka's great wheel of Dharma, now stands for both righteousness as well as our material advance as a people, is because India's wisdom is powered now by India's enterprise, by India's prowess, by India's skills.

And yet.
There is something that is not quite right about this story. Something that is in fact, wrong, horribly wrong about it.

If there were not something wrong, would our cities be as ugly as they are? Would they look, in their smog and soot, their cheerlessness and their wailings, like crema-to-ria and cemeteries? Would they smell like one vast toilet, open for most, enclosed for a few? If something were not wrong would our cities, suburbs and towns be the polluted, malodorous, cacophonous, pestilential aggre-gations of decaying cement, rusting steel, grease-laden glass? Would their air be sluggish with the exudations of their own congestion, their water contaminated with the excretions of their waste, their streets clogged by the extravagant debris of their relinquishings, abandonings and leavings? If something were not wrong, would the mountains of urban refuse be shifted with shameless cynicism to beyond municipal limits where urban India ends and rural India begins?

If there were not something wrong, would our flyovers meant for the vehicled be the 'lie-unders' that they have become, for the homeless and the hopeless? If there were not something wrong, would the expo-nential change in our road-scapes include another ironic agony, namely, of seeing the Indian pedestrian – who forms the majority – deferring to vehicular India; edging away, cringing, crawling, squeezing himself or herself, moving onto a side to halt, pause, resume walking only to be stopped again by the elbow-grazing whizzings of two-wheelers, three-wheelers and four-wheelers that overtake, one after another, and another, and another till at last you get a clearing and move for-ward when, suddenly, comes yet another and goes past you as if you are a redundancy or a mistake in Creation. In Norway, a monarchy, the King is often a pedestrian, but the pedestrian is always a King. In India, a democ-racy, the King-equivalent has right-of-way and the pedestrian has the right-of-luck.

If there were not something wrong, would our technol-ogy-driven green revolution have to witness, alongside its great successes, the ironic agony of an agrarian crisis with a farm suicide every thirty-five minutes? If there were not something wrong, would our technology-driven 'development' model be so abject an onlooker to illegal mines that disembowel the earth and endan-ger the countryside, while enriching the mafia, an onlooker to illegal timber-felling that disentitles and dispossesses tribals while enriching contractors and developers and thereby throw the disinherited into the death-dealing embrace of Naxal violence and counter-violence?

This is where the ethos, the root, the origin, the founda-tion of the concept of 'technology' comes in. This is where the voice of technology comes in. Technology must see itself in ideational terms, not just in techno-logical terms. For far too long has technology been regarded as a mere instrument. It is that, of course, but it is also something more. It is an attitude, an approach, a path that poses alternatives, discusses reductions, eliminations and conjugations of itself, evaluates itself and not in isolation but contextually.

A technologist is not a cook waiting to be given a menu for the next meal; a technologist is the repository of engineering cuisines, of scientific options and empirical opportunities for material fabrications that have grown out of experimentation and contextual discernment.

A technologist is not a mali waiting to be given a floristic preference for the season by the malik; a technologist is a gardener-botanist, a gardener-arborist, an expert in floristics who knows the soils and the seasons, can read the clouds and the climes, can advise what to and what not to plant and when, what to weed out, what to position where, how much space to leave between a wide-rooting tree and one that is big over-ground but small beneath.

In other words, a technologist is a counsellor, not a courtier whether to the State or to corporates. The technologist has to partner planning, not implement orders mechanically. This means that a technologist must therefore be an unflagging observer of the human condition, not just the technological scene. A technologist cannot afford to miss the fact that technology has pulled groundwater out faster than nature has replenished it or ever can. A technologist cannot afford to miss the fact that with water below sinking and garbage above rising, we as a nation are beginning to choke.

A valued friend of mine of Dutch ancestry, Ludwig Pesch has made a deep study of Carnatic music. He visits India regularly. After a recently concluded visit, he has mailed to me as follows:
"The only real threat to visitors and residents alike, must be the ever increasing pollution due to consumer behaviour and official neglect: driving through… felt like traversing a never ending, smouldering garbage dump with plastic fumes forming a thick smog. For some 3 hours, I wondered

"which god's country this could possibly be?"… This development is all the more saddening because it's avoidable and could easily be rectified with some basic modern facilities to reduce or process waste and related to interventions such as a modicum of environmental education…"

What for the layperson would be a matter of olfactory comfort or of visual aesthetics, cannot be so for the technologist. Only a technologist really knows how exactly and with what attendant consequences the places where our filth piles up are also the places where or near where our aquifers are being tapped for the bambas of pani we buy, and for the distilled brews in smart, dark bottles we sit back to imbibe. A recent Delhi University study has shown that in south-west, north and outer Delhi, ground water is "a deadly cocktail" of Total Dissolved Solids (TDS), fluoride and nitrate on the one hand and water on the other. Against the WHO limit of 1.5 ppm the groundwater here has 11.6 ppm. Do not ask me about nitrate contamination: WHO norm 45 ppm – Najafgarh, 138.21 ppm. The Blue Baby syndrome is directly related to nitrate poisoning.

We may blame places in East Asia, we may blame vectors, birds, poultry, cattle and swine for the zoonotic pandemics that have hit us, particularly the poor among us, and can hit us at many times as the furies we have seen. But it is only the technologist who can warn us, with the weight of expert understanding, that our own lifestyles and work styles, our manufacturing styles and the scant attention we are paying to the side-effects, the by-products, the fallout of these and our own standards or the lack of them in civic maintenance, that are making us famous in the world as its Sewage Champion, its Stink Champion and its Champion, not of Rising Expectations, but of Rising and Dangerous Contrasts.

Let me be a conveyor of one more unpleasant theory and say what only technologists can confirm, namely, that in our present conditions of callousness, it is only a matter of time before that ancient curse, the plague sets in, in our cities. Let us not forget that in the late 1990s, Surat in Gujarat was wracked by that dreaded disease and it was only the ingenuity of a determined Collector that saved the day. Will it be any help then to know, if that happens, that we are an aspiring Super Power? 'Make us a global power' is a callow prescription. 'We should be a super power' is a school-kid ambition. 'If they are Asia's tigers, we are Asia's only elephant' is a Jungle Book dream. Technologists should be able to say 'No Sir,' or 'No Madam, we must aim not at status but at substance, not at power but at prudence, not at beating anyone at a race but at finding our own right pace'.

Is there a point, any at all, in our aiming at a ten percent growth rate, at our 15 IITs doubling in number or even becoming fifteen times fifteen, at our miniaturising the potency of the nano, maximising the efficacy of fibre-optics, at our celebrating the ingenuity of genetic modifications for brinjals today and for – dare we say it – tomorrow, of planning a gravitation-aided dive into the sea-floor to collect precious nuggets of energy, and an anti-gravity soar into space for a manned moon landing, and another landing at an even more elusive surface, namely, a permanent seat in the UN Security Council, and at our wanting to become a Super Power – if all this is achieved with a metaphorical half of India facing dispossession, disinheritance, dislocation and distress beyond endurance and, at the same time, we in our growth-generating cities remain powerless, defenceless, witless and speechless, not before some weaponised enemy, but

Choices

■ JAYA JOSHI

Peepli [Live] a comic satire produced by Aamir Khan and directed by first-time film-maker, Anusha Rizvi closely explored the topics of contemporary India, the differences between rural and urban India and India post globalisation. Both funny and sobering, it worked with a backdrop of farmer suicides , unwilling and self-serving politicians and news fanatic media that creates deafening noises and takes less than a blink to abandon the cause for the next big 'breaking news'.

As a publicist, I've seen media and know its inner workings a bit too closely. I've participated in them myself. Manufacturing consent for one of India's most popular products (read fairness creams); Selling cause-related PR without appearing to exploit the sentiments for profits for far too long (read region-wide anti-obesity drive in the Gulf); and years of manoeuvring, manipulating and staging news in a certain right way, got a bit tiring after a point. Before joining IIT Bombay, I was quite sure that I had lived

and ended the era of a PR professional. But it is my tragic flaw after all, and I ended up joining IIT Bombay as its PRO. How bad can it be, I thought to myself? I looked at the world outside the gates and then the campus within that I could live in. I looked at the thick green cover, lakes, hills, the lovely house, my office. It was all swell. But then, years go by and one gets used to these things. 'What next?' is a question that someone like me should always be ready for? The good life tried to blind me away from the question. I won't deny. But I would like to believe that when I first took this position, I already had the answer. It's a different matter that it was lounging lazily at the quiet, bottom, left corner of my head.

If I look at all my career moves as investment decisions, joining IIT Bombay, has so far been not just the safest but also the best. And I have good reasons. Though there are plenty of mountain-like challenges, I still feel truly honoured for having an opportunity to promote an institute like ours; I can actually say no to news reporters when I don't want to say yes, and not chase or create news hungrily for the sake of column centimetres; and If ever I've had to be the messenger of news I don't believe in but had to for the larger interest of the institute, I do have an option of expressing my views and even saying no. But most importantly I feel lucky because I get to bring out Raintree – a magazine that subscribes to a certain standard of freedom of expression and gives me like it gives you a platform to air my views and opinions.

So my answer to the daunting 'what next?' was to not go on for the sake of good life because nothing is ever good enough but to find work that provokes critical thinking and provides opportunities to test my own hypotheses with a sense of urgency. I'm not sure if I was searching for an ethical answer but whatever it was, I did find one that I could mostly feel at ease with. Each individual has a personal definition of ethics, which is drafted based on backgrounds such as family, society, education and environment. Noted novelist and journalist, Khushwant Singh's comment that appeared in an essay by Ramachandra Guha sums it well. Singh, who studied at St. Stephen's in the 1930s, on being

asked what the college gave him said he learnt there that 'parts of the Bible were great literature'. He adds that 'another thing that St Stephen's gave me was a consciousness of what is right and what is wrong'. This didn't 'come through sermons on morality, it was there in the atmosphere that pervaded the campus: you imbibed it, like inhaling fresh air'. IIT Bombay is not an isolated island detached from larger national realities. The role of ethical practices in an academic institute are multifarious and forms an elemental part of institution building. For young students the institute needs to engineer an environment where they can aspire to be better human beings no matter what their background. It needs to lead by examples, set role models that allows them to question their values and moulds their own definitions at the same time.

In this issue of Raintree we've tried to present the definition of ethics in as many different voices as possible. The Essay by Prof. Shishir Jha with opinions from other faculty and staff members makes pointed observations and asks some difficult questions. Sushil Shintre, our young alumnus shares his views on the career choice made by him. We have Shruti Inamdar, a campus resident on what ethics means to her. The R&D story on CTARA prototypes presents a perspective you may not be aware of. The dry wit and self-deprecating humour in Mohit Sharma's account of dilemmas in the life of a student at IITB, beautifully illustrated by Utkarsh Raut in our Centrespread is irresistible. Alumnus Bakul Desai's comic strip also illustrated by Utkarsh on the backpage takes Raintree to an all new level. You will not want to miss these. This time the lead piece is not written by one of us, but by Shri Gopal Krishna Gandhi, who was the chief guest at our last Foundation Day. His speech was such a perfect fit with this issue that we decided to reproduce it and let it reach out to all those who missed it. For those who were present, read it again. I find something new in it every time I do.

This issue demands to be absorbed and not just read over the weekend. I look forward to your comments. ■

Letters to the Editor
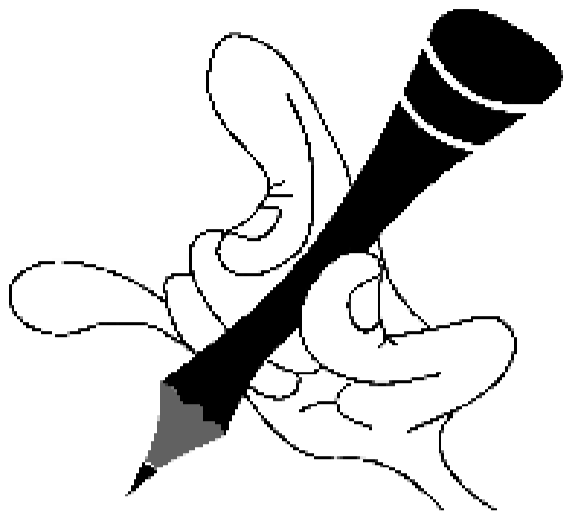
May I congratulate you and your team for securing such a prestigious award! Given the Institute's golden past and the glorious future, it is necessary to make available to the community at large, narratives relating to various periods in the life of this majestic institution. Otherwise, such precious information will be lost forever for posterity.

We had a campus diary which just chronicled new entrants, retirements, the occasional conferences, etc. Over time, the diary just got fatter because of increase in faculty strength; but the contents remained insipid.

Raintree on the other hand is an invention. Articles are good, themes are contemporary and language is excellent. That the campus stands as a lone green bastion against the concrete jungle of the city is highlighted in many issues of Raintree. That the Institute is a 'temple of Modern India' is well brought out by the professors and researchers writing about their specialisations in simple language. Over a period of time, it has encouraged campus residents including home makers to pen their thoughts and be heard. My wife, Malathi is also a Raintree fan and looks forward to each issue. Keep it up!

P.S. You have transferred me from my parent dept of Elec. Engg. to a brother-dept of Mech. Engg. No problem, as I will now be in the illustrious company of the Kalaams of the campus – Prof. De and Prof. Sukhatme!
Prof. M. V. Hariharan

I am not writing below about ethics, but about something else. I just returned from a walk after dinner. I usually go from the Guest House to as far as Sameer and Ananta and circle back by the north end of the academic area. Out of curiosity, I sauntered through the resident complex adjacent to Ananta. Perhaps its name is Vidya House(?). This was the first time I went to see it. In this complex, there are three tall buildings, each with several floors.

To keep this e-mail short, I will write my bottom line. I was appalled to see how neglected condition this whole complex was in, to say the very least. One must visit this place to see its decrepit condition. I don't know who lives there; I did see a Honda City car parked there, however.

Sometimes I wonder why we are so conditioned that ruins may be in front of us, but we don't see them and therefore do nothing about it. It seems as though we are under some kind of taboo, inebriation, or delusion that we accept whatever conditions we may be in, won't talk about them, won't challenge them, and won't find ways to improve upon them, even within some real constraints such as a budget. [This is, of course, in contrast with what Mahatma Gandhi did to gain independence from British.]
Prof. H. B. Hablani

In my opinion, the comic strip on PG-UG distinction printed in the last issue of Raintree was distasteful. It speaks volumes about the innate 'racism' against the PGs that I have, in my three years at IITB, observed time and again.
Aditya Joshi, M.Tech CSE

Congratulations to you and your team for the ACU award to Raintree. The selection of the articles, the layout, are all of the best quality.
Prof. U. A. Yajnik

Congratulations on the recent award. You have worked hard to take the campus magazine from a mundane report of events to a collection of thought-provoking articles that all "supposedly intelligent people" (to borrow from Prof. Ahluwalia) look forward to. Great work!
Prof. M. Patil

Congratulations on your efforts and the award. Thanks for choosing Ethics as the theme. It may create some awareness on such an important topic. Keep it up!
Prof. K. Momaya

The October-December 2010 issue of Raintree was wonderful. There is a mistake, however, in the illustration of the betel-nut tree on the front page top-right corner. The illustration of tree shown resembles bottle palms (Hyophorbe lagenicaulis). It certainly does not resemble a betel-nut (Areca catechu) tree.
Prof. V. M. Naik

Congratulations for the award, ma'am. Your team has really set the highest standards for Raintree. Hope to see interesting editions in future also.
Manjeet Kumar

It's a very good idea to deliver Raintree at home. This will surely increase its readership, and hopefully, entice many residents to contribute articles to it. I have a suggestion, there is a bus that drops and picks up ~50 employees who stay off-campus to and from Kanjur Marg. This bus leaves at 5-30 PM from near Main Building. It will be a good idea to handover copies of Raintree to these people when they leave for home. Keep up the good work!
Prof. R. S. Pant

The picture of the tree in the last issue had a closer resemblance to bottle palms (Hyophorbe lagenicaulis) than the intended betel-nut (Areca catechu). The betel-nut tree looks more like this.

We inadvertently forgot to mention the name of the artist behind this beautiful illustration that appeared along with the article Braess's Paradox on page number 27. It was drawn by Ms Ankita Roy from IDC.

Technologists for a Better India

before the putrefying all-pervasive stench and stigma of our own human waste and the great contrasts that our particular curve of development has taken? So, how are technologists to acquire a greater and a more appropriate say in the nation's destiny? I would suggest they do so not by claiming turf, not by clutching at jurisdiction, but by making reasoned interventions in the public domain. They have the example of Prafulla Chandra Ray and Meghnad Saha, of C.V. Raman and M. Visvesvaraya.

The celebrated astro-physicist and Astronomer Royal in Great Britain, Lord Martin Rees has written a masterpiece of a book The Final Century. It is a 'must read' for everyone who cares about Planet Earth, but it is an 'absolute must read' for scientists and technologists. He has said in it that the earth as we know it, and the civilization on it, has a fifty-fifty chance of surviving this century. He cites human error, terror, misjudgments and misbehavior as the chief antagonists of the chance of survival, apart from the ever-present possibility of meteorites colliding with the earth. He is speaking to humanity as a scientist, a technologist and a humanist. He reminds me of Bertrand Russell, with none of the great philosopher-physicist's idiosyncrasies.

If Martin Rees can warn us, if the Pugwash scientists can, why cannot our scientists and technologists do so as well and better? They are, unfortunately, being asked to script only happy stories, success stories. And when they cannot do so, to maintain a silence like someone under

oath to stay silent. We want to hear from them only sweet tales of experiments well conducted, launches well directed, new breakthroughs and novel inventions. We do not want to hear from them the bitter truth or prescriptions for a change that we as a society must bring about. It cannot be that society stays an inert mass and only technologists move and shake things in laboratories, test-sites and launch-sites. It should not be that technology is associated with that which pollutes, and environmentalists with that which de-pollutes. Oxygen is as much the breath of science as it is of life.

There are two specific areas where news from the world of technology would be welcome. First, in the de-scaling of costs involved in solar power generation, storage and distribution, and likewise in desalination processes – which are two planet needs. It cannot be that nature has made what is abundant and free – light and water – to also be so costly. Second, Indian technology must show us the way to an intelligent and safe system of disposing and degrading waste – in the waste from industry, particularly e-waste and plastic waste, waste in the shape of silt from hydel projects, waste in the shape of brine generated at desalination plants and, most importantly, nuclear waste that will be generated more and more as we turn to using nuclear energy. For far too long has science been asked to play Brahma, the Creator and Shiva, the Destroyer. It is time it turned into Vishnu, the Protector. It is time it secured not just India's but humanity's buniyad.

I will conclude with a prayerful request. No one is going to take the perils of climate change seriously if the so-called 'Greens' alone are going to talk about it. But if some of you do see that danger, it is you who must speak up about it. You are the ones with domain knowledge; others have only a general anxiety.

No one can deny that the permafrost is melting, or that the Antarctica is getting less and less cold. No one can deny the monsoons have been behaving erratically. But if after a failure of rains, after a drought that deepens into a famine, we have to change from a pattern of two baths a day to a bath every two days, when bottled water even for those who drink that privileges liquid begins to cost not Rs 10 or 12, but Rs 100 and water riots start as they did in Bolivia, when along with the Maldives, our own Lakshadweep begins to feel the mean sea-level rise and on the other coast, the Sunderban begins to go under tidal risings, and we see climate refugees in numbers that would make the 1971 experience look like a rehearsal, prodigal users and exploitative wasters of scarce resources will be called to account, as will be policy makers, but so will technologists. Hydrologists, geologists, climatologists will be asked why it is that they did not warn a profligate age betimes.

I conclude with the thought that technology is at its start, a thought as well, and no ordinary thought but one that can tell the difference between a dream and a nightmare. And can make one come true and banish the other. ■

The Road Mis-Taken ■ **SUSHIL SHINTRE** Alumnus, B.Tech (2010)

X: So what are you doing these days?
Sushil: I took up this fellowship with Teach For India. So I am teaching a bunch of Grade 3 kids full-time at an under-resourced school for the past year. It's a two-year commitment.
X: What? Why?! (with a genuinely puzzled look)

Different people have taken this role of person X, from friends, neighbours, relatives, my teachers, acquaintances to random-strangers-who-become-momentary-acquaintances in this past year. Usually, this response of theirs has two connotations – 'Are you out of your mind?' or, 'Oh, what a sacrifice!'

Am I out of my mind?
The choice doesn't seem as absurd if we consider the fact that like most IITians, my final year in B.Tech. was the first time I was making a conscious career choice in my life. I had only chosen IITs so far and never a career. I could hardly put things into perspective and think about what I wanted to do in life at 15 as I could at 21. And coming from IIT Bombay, I did have a few choices to pick from but wasn't entirely sure which one was right. I sure did like engineering, but couldn't overlook the possibility of being more suited for something else. The possibility that perhaps in the long run, I would be more satisfied being in a sector like education than engineering was something I could not allow to be a mystery. There was only one way to know for sure – experience it.

Objectively, it was a thought-out choice. Not a career choice necessarily, but one that would possibly give me more clarity or direction in life and even open up more avenues eventually. At some level, it was also a calculated risk. There always was the possibility that things would not turn out the way I hope they would. At the end of it, I find I am not cut out for this. So be it. I will be 23 by the time I fulfill my commitment and it by no standard is

> I will be 23 by the time I fulfill my commitment and it by no standard is a bad age to start my life afresh – in engineering or any other profession considered 'normal'

a bad age to start my life afresh – in engineering or any other profession considered 'normal'.

What a sacrifice! Or not?
This perception towards a job like this, if I may dare say, is largely a result of ignorance. Teaching, if not before, has now become a legitimate choice for a career. A number of organisations are working effectively in the field of education for the under-privileged which aren't for profit but aren't charitable either. Their intentions amongst other factors are debated by a lot of cynics, but that is no reason to not venture in to the field at all.

As for the money, which usually is the biggest concern, the pay is considerably lesser than the celebrated packages of IITians. Even so, it is a notch higher than most salaries that fresh graduates would get in this country. It has never been, at least to me, a hindrance in leading a comfortable life.

On the other hand though, the job has a lot to offer to compensate for the pay. Yes, most of it is intangible but not unworthy of recognition. Firstly, I get the most innocent and genuine colleagues to work with – the kids! To think of it, it's no different from a typical office. We have targets - average and individual, we have formal plans to achieve them and each of us has a role to play. Unlike many other professionals, I can say I can't wait to get back to my 'office' everyday.

Eventually, when everything is said and done, I am going to have countless stories to tell – good and bad, with tremendous potential to learn from and the satisfaction of having done a bit and an opportunity to do more for an urgent cause in our country. And above all, I am going to have 60 children whose lives I may have helped change for good and who would, irrespective of what becomes of them, remember a certain Sushil Bhaiyya that taught them while in school. I would say it's hardly a sacrifice!

The year gone by
I started off with a Grade 3 class of 60 students in a school in Govandi in a predominantly Muslim community. Most of my students started with me at approximately a level where students of Kindergarten or Grade 1 should be and have come a long way since academically.

With stiff targets to achieve, it's been a challenge walking in to the classroom everyday knowing how much each stakeholder expects out of us – the organisation, the parents of our students and most importantly the students themselves. Over the course of the year, we have been privy to the stories of most of our students and the one thing I continue to marvel at is how different my life was when I was nine! Also, for the determination with which my students face the challenges life presents to them, for the maturity that they show in being aware that it is up to them to make things change and for the faith that they have in me, if anything, I owe it to them.

> On the other hand though, the job has a lot to offer to compensate for the pay. Unlike many other professionals, I can say I can't wait to get back to my 'office' everyday.

As much as I would like to celebrate the last year, I would be cautious and say most of my assumptions were right and I certainly do not regret the decision. Like any other 'industry', this one also carries its own pros and cons. There are as many things to dislike as there are otherwise and one can't avoid that. It is, after all as we often say at TFI, a choice – to sit it out or dance.

To end with another dialogue, this is an entry in my diary tagged as what I call the 'I know why I am here' section. This knowledge isn't obvious and unfortunately in a field where obvious successes are rare, it helps us to be able to find those moments that make us happy.

6 Dec 2010
(A brainstorming session to decide classroom-behaviour incentives)
What prizes do you want for being Didi and Bhaiyya's ideal student?
Sheetal: Bhaiyya, I want your hand.
Sushil: What do you mean? I am confused!
Sheetal: You help everyone. I want to be like you.
*Sushil: (still confused) *smile* ■*

■ **PROF. SHISHIR K. JHA** SJM School of Management

ESSAY

(Un)Ethical Predicaments

What really is an ethical engagement? Does it considerably vary from person to person or could one arrive at points of ethical convergence? The perplexing thing is that one could answer with a 'yes' to both these queries without necessarily being contradictory. IIT Bombay, like all liberal institutions in this country, is also grappling with the issue of how to individually and collectively deal with our ethical predicaments. In order to ascertain certain perspectives, Raintree requested several faculty and staff members to share their views on the importance of ethics with respect to their professional engagement both within and beyond IIT. There were, as expected, varied but interesting responses.

Not surprisingly, plagiarism and behaviour during exams were among the most important academic concerns. Issues about our engagement with our physical environment, the muted voices of accountability or our uneasy relations with our students were also raised. My attempt here is to weave together a narrative with such articulated concerns, raising, in the process, further questions. Any failures in this delicate effort would be entirely mine as I may not be able to do considerable justice to the range of viewpoints expressed. This is not an effort to provide a general view of ethical practices within IITB; I am not competent enough to do that. I would merely like to use the occasion to draw upon the several responses we received so as to sketch a brief contour of the present state of ethical engagement within our institute.

Perhaps one way to think of ethical conduct is to consider it on dynamic rather than static terms. By this, I mean that whether for an individual or for an institution, is there a perceived increase, over time, in the level of ethical commitment and engagement? Do hypocritical practices or double standards substantially change when objections are raised against them, or do we continue, even in the face of such critique, to provide superficial explanations for unacceptable behaviour? Amartya Sen in his book, The Idea of Justice suggests something similar when he argues that the provision of justice should be as much about radically diminishing the ill effects of injustice as about

Do hypocritical practices or double standards substantially change when objections are raised against them, or do we continue, even in the face of such critique, to provide superficial explanations for unacceptable behaviour?

Illustration by Ankita Roy, IDC

planning and wishing for the emergence of a fully developed ethical society.

'Can ethics be taught?' is a frequent question that one encounters within the corridors of academia. If common sense suggests that ethical values appear to vary from person to person, then how can one claim any sense of ethical 'objectivity' or generalise them? Indeed, one cannot teach it in the same way that corporate strategy, accounting, finance or electrical engineering is taught. In addition, it cannot be taught with the prior belief that there is a singular moral universe that we all necessarily subscribe to. Nevertheless, perhaps if ethics is perceived as a set of normative practices that engages two entities (individual/s and/or institutions), then one can 'teach' it by helping uncover deeper predicaments. This can also be done by bringing to the surface and engaging with many of our witting or unwitting ethical blind spots. The first step, therefore, would be to openly acknowledge anxieties about our ethical uncertainties. Yet it appears that this simple step of open acknowledgement seems the most difficult to facilitate. Such refusal, sometimes spread over several generations considerably raises the stakes for sustaining an unprincipled status quo. Unsurprisingly, the moral courage to raise ethical questions becomes rather subdued. We keep rationalising our behaviour by insisting that the emperor indeed is wearing very fine clothes.

IITB is clearly not an isolated island, detached from larger national unethical practices. Ours is a nation with deep-seated and glaring socio-economic inequities, which, much to our general impatience are altering at an almost glacial speed. To its credit however, IITB has, in the past fifty years, succeeded in putting in place certain institutional mechanisms that support just and principled practices. This has happened sometimes proactively and sometimes belatedly. To take an example, nepotism and

Are we perhaps so ethically challenged, that we would rather choose to plagiarise and risk being shamed, than betray our lack of creativity in expression?

favouritism in admission to various programmes offered are simply unthinkable. The current JEE Chairman, Prof. A. Chatterjee is of the opinion that JEE is a time-tested system which, at every stage, has created several checks and balances. He says that JEE "has been structured in such a way that the person is not more important than the system. There are well-defined procedures and there is not much space for personal dilemmas. At the end of the day, however, you do play intuitively. You decide on whom and how much to trust." The fact that considerable energy, planning and resources have been mobilised to create such an environment within India does suggest a deep concern of maintaining a basic degree of fairness in the conduct of the JEE exam.

A similar view has been expressed about the state of faculty recruitment. Prof. S. P. Sukhatme, ex-Director of IIT has once commented that during his tenure as a Director, he did not receive a single phone call from anybody requesting admittance to the institute. Indeed, this record speaks volumes about sustaining basic ethical standards.

There are several grievance redressal mechanisms within IITB like the Vigilance Cell, Women's Cell and the Disciplinary Action Committee. The Central Vigilance Officer (CVO) of IITB, for instance, examines cases of financial irregularities and charges of corruption. The reports are forwarded to the Chief Vigilance Commissioner (CVC), who is appointed by and reports directly to the Chief Vigilance Commissioner of the Government of India. He or she has the power to investigate the actions taken by directors as well. Although the CVO does not appear to have an independent support system (and the registrar collects the requested information), an independent inquiry is instituted by an external independent authority under instructions from the CVC. Such reports are confidential and even the director is not privy to them. The CVO can also examine specific charges of nepotism while hiring administrative staff within the institute, when such instances are brought to the notice of CVC or CVO. In addition to this, the scrutiny by various sections, including party representatives of employee associations act as de facto watchdogs on the system.

Prof. Contractor, the previous CVO, feels that the pressure on both the system and the vigilance officers is considerable. He is of the opinion that the system has become a lot more open. Public awareness, thanks to the RTI act has ensured that a certain level of transparency is maintained. "Even the 'Discuss Faculty' email group," he feels, "is an excellent vehicle for the faculty to share its views and express their concerns on issues that often have moral or ethical connotations."

If at the broader institutional level, IITB appears eager to be putting institutional structures in place, ethical interactions on a day-to-day basis merit even greater attention. Both Prof. Bhaskar and Prof. Parthasarathy feel rather strained about the fact that plagiarism is rampant across several institutions within the country. Prof. Parthasarathy states, "What is worrying is that the faculty does not seem to be as concerned about plagiarism as they should be. While the usual noises are made, few of them seem to make a serious effort to detect and then take appropriate action. Most faculty members seem to wait until others point out instances of plagiarism." Other faculty members have also echoed similar concerns. Is plagiarism a result of a severe lack of confidence in our ability to produce originality in expression? Are we perhaps so ethically challenged, that we would rather choose to plagiarise and risk being shamed, than betray our lack of creativity in expression? Such practices need to be carefully examined within our institutional space rather than merely making, as Prof. Parthasarathy says, the "usual" noises.

'Can ethics be taught?' is a frequent question that one encounters within the corridors of academia.

The even more serious problem that faculty are generally encountering is the attempt to beat the examination system. The greater the emphasis that society places on degrees, the greater appears to be the penchant for an instrumental approach to knowledge assimilation. By this, I mean that the joy (and sometimes agony) in the pursuit of knowledge is increasingly devalued in the onward rush to acquire certificates and credentials. Large class sizes and the consequent diminished attention and greater alienation, the misguided desire and thrill of getting away with such misdemeanours, the inability to strongly face up to certain ethical standards – whatever may be the reason, there are increasing reports from faculty regarding students' wrongful approach towards examinations. Such behaviour, if not quickly checked, begins to have a cascading effect over time. Prof. Bhaskar feels that it begins to affect "fairness in grading, and you inadvertently set a trend in which a person who is doing an honest job of learning and studying for exams gets a lower grade than one who is not."

Unfortunately, instances of ethical weakening are not abating. They require careful examination of both the reasons for their increase and ways of subsequently penalising such behaviour. It is interesting to note that in this context, certain universities have in place an Honour Code, which students sign at the end of each examination. One such pledge states: "I pledge my honour that I have not violated the Honour Code during this examination", followed by the student's signature. I presume that the repeated act of reading and signing such statements by students goes a certain distance in restraining one from engaging in acts of moral misconduct.

Many other issues appear to be unattended on the academic front. Prof. Parthasarathy mentions that for some unfortunate reason we have not created any guidelines for "informed consent while doing research, whether the research involves human beings directly or indirectly." He goes on to add that "there is a tendency among some faculty members to see these guidelines as hindrances to research" without "attempting to seriously comprehend the reasons for their existence." Indeed, we do not have a Researcher's Code of Behaviour, something that is taken very seriously – particularly in European universities.

Another sensitive area of concern, according to Prof. Parthasarathy, is our degree of "[un]willingness to address the educational needs of students from difficult backgrounds, and the need to transform one's teaching abilities to the context of a more diverse student profile." He is troubled by the fact that when such issues are pointed out individually to faculty colleagues, "they either cite lack of time, or simply swear by a 'sink or swim' approach for students, ignoring the fact that owing to that section of

students' social and cultural background, special efforts are needed to enable them to perform well."

Compounding this problem is the fact that an unspoken hierarchy has been created, where courses offered by say, a department such as Humanities and Social Sciences are implicitly valued less than other departments. Perhaps in Prof. Parthasarathy's view, the ethical call of education goes much beyond preparing students to become merely productive citizens; it involves a deeper understanding and engagement with the social and historical complexity that the student brings with him or her to any institution. Relating to this complexity would allow the student to feel a sense of 'identification' with faculty and the academic environment at large. The interesting question then becomes, how does one breach such strongholds of seemingly "proprietary" knowledge formation? Alternatively, to put it simply, how does one value openness in reflection and engagement?

Going beyond the academic space, the particularly difficult question that Prof. Parthasarathy raises is with respect to the potential intolerance that is exhibited on issues related to regional, religious, caste or gender issues. He does admit that the institute, to its credit, has taken cognisance of such problems, but he also adds that not enough action has "been taken to prevent such incidents from taking place in the first instance." By not publicly censuring such behaviour, he feels that we could possibly be sending a signal, even if erroneous, that there is tacit support by a silent majority for such unedifying behaviour. In an institute that provides considerable space to individual faculty, articulating such institutional concerns will require rethinking the balance between freedoms and responsibilities.

Mr. C.P. Joglekar, in his capacity as Coordinator, PTD & Legal has found ways to help both students and staff members who find themselves in dire straits. In dealing with disciplinary actions against the institute's staff members, he has realised that at times, the institute's actions are not quite appropriate. However, in the larger interest of the institute, he has fought and won such cases, but he also takes the trouble of pointing out to the appropriate authorities the measures that can be "put into place in order to prevent such a thing from happening again." He clearly acknowledges that students and staff members who behave wrongly certainly deserve a reprimand. At the same time, when a staff member faces disciplinary action and is likely to be expelled, Mr. Joglekar says that he tries to place himself in the shoes of the offender before proposing an adequate remedy, as family members could also be affected by such decisions.

Shifting this discussion to an entirely different register of concern, for Prof. Avijit Chatterjee, ethics is perceived in terms of how we choose to live our daily lives through our social, cultural and environmental forms of interaction. For him, ethics comes down to personal choices, although they are also influenced by larger contexts. He says, "After reaching a certain age you intuitively know what is right, what is wrong. But at the end of the day, middle-class sentiments and other such social influences certainly create a conflict with your set of ethics and also fashion them in a certain way."

The continuous pressure to perform, to produce quality results and how this performance is measured has the potential to drag both students and faculty into ethically grey areas.

His views allow for a different set of concerns to emerge. "I worry over consumption. If you own two cars then to me you may probably be slightly more unethical than say somebody who uses a cycle or walks, given that both of you have a choice in the matter. My sense of ethics are to a large extent ecologically defined – how does your presence affect the natural world in which you live in?" He is therefore critical of practises that are based solely on consumption. How, for instance, do we use our land? Do we pay diligent attention to lesser usage of concrete and plastic? Do we have lesser vehicles with greater space purely to pedestrians? As India inexorably moves ahead with its rapid though uneven growth, the concerns raised by Prof. Chatterjee will certainly affect us even more. We can perhaps already see symptoms of certain trade-offs on our campus, that are not altogether environmentally friendly.

In a world where there are no uncontested definitions of right and wrong, and also where perhaps the choices that one makes, at the end of the day depend on one's personal moral radar, there is a constant maneuvering between the principles that one espouses and the tactics one adopts. Sometimes, however, this moral framework does not provide easy answers. Mr. Joglekar would like us to think that the issues of ethics are also about sorting through our morally wrought decisions, and weighing which direction our actions point us to. Narrating an ethical dilemma from the Mahabharata, Mr. Joglekar asks us to reflect on the ethics of our choices. In this tale, a religious man is walking behind a cow, with yet another man following him whose intention is to kill the cow. Soon they reach a divide in the road and

(Un)Ethical Predicaments

the cow moves towards the path lined with bushes and disappears from sight. The man behind cannot see the cow anymore and wonders aloud where it has gone. Knowing his intentions, would you, the religious man, lie to him to protect the cow or would you be honest with him because you also know that ethically, lying is wrong? In such an intricate context, can one perhaps take a view that sometimes, lying is something that can be used to save another life? That perhaps relative to protecting a life, untruthfulness is less of a predicament?

What all of the above (whether they are academic or extra-academic concerns) indicate is that institutional growth demands a lot more than basic prescriptions of honesty, professionalism and equality. An institute's culture must not only place normative focus on these qualities but it also needs to actively strive to create an environment which engenders a more nuanced and sensitive questioning of the general ethical values that we, as part of this culture, embody. The obvious question then is, why have we become so vulnerable to acts of ethical impropriety in the first place? Prof. Contractor offers an interesting explanation. He places greater emphasis on the specific circumstances that encourage or discourage such kinds of behaviour. He feels that "the continuous pressure to perform, to produce quality results and how this performance is measured has the potential to drag both students and faculty into ethically grey areas." In his opinion, we are caught in a bind of sorts. Therefore, while he feels that the institute needs to develop "some matrix to measure student or faculty performance, it is again this emphasis on 'measurable practices' that puts great pressure on faculty, particularly on young faculty."

He elaborates on what he calls the double-edged nature of our ethical dilemmas. The importance of

personal milestones for young faculty such as receiving the "Young Achiever award by the age of 30 or the Swarnajayanti award by 40 or the Bhatnagar award by 45," he recounts, produces its own ironic set of consequences. Perhaps, as a result, the pressure "encourages some people to take short-cuts, cut corners and become grist in the paper production mill." The insti-tute, he recommends, should take a closer look at "older patterns of working and find new ways to laud achievements."

The presence of ethical tensions between normative rules that ought to be followed – and pragmatic considerations that arguably constrain ethical behaviour – is indeed a very healthy sign, since it shows that there is cognisance and a certain discernment about the nature of our private and public ethical concerns. Most of our everyday choices do not require sorting through very grave ethical quandaries. They are mostly about relatively ordinary concerns, be it behaviour during examinations, acts of plagiarism or indifference among colleagues for the same.

The institute has clearly shown admirable standards of professional and academic commitment. For instance, the earlier Dean (R&D) invited a group of faculty to engage in open discussion with the senior executives of Dow Chemicals, India over their interest in funding projects at IITB. Several faculty members appreciated the creation of such a space and came away with a greater belief in open forms of conversation. On another occasion, Prof. Contractor recalls that Monsanto wished to fund a project at CTARA. "It took just one phone call to Prof. Date, who was then the head of CTARA. He in turn had a quick consultation with his colleagues, who decided upon politely but firmly declining Monsanto." The Women's Cell, on its part has also rarely shied away

from acknowledging the concerns of women students and faculty members. Mr. Joglekar also attests to the fact that the institute is sensitive to the concerns of individual students when facing disciplinary charges.

Are we, however, still missing something in our institutional efforts? Are there deeper sets of cumulative and unarticulated ethical concerns that need careful tending? We live in a world filled with insider trading within blue chip firms – the very deliberate malfeasance by the who's-who of banking, consulting, credit rating and policy-making professionals (i.e. the American housing loan crisis that has been scathingly critiqued in the film Inside Job). Closer to home, consider the Indian season of a-scam-a-day. Some would argue that in light of this, is it fair to expect behaviour (other than unethical) from students, faculty or staff? Are our actions so truly unforgivable? Perhaps not, but once objected to, it is our subsequent actions that really count.

The ethical predicaments that we face daily are not altogether alarming. Nevertheless, if the societal air that we breathe is laden with, shall we say, ethically disruptive particles, then without obviously noticing it, our moral fibre would erode as well. At the very minimum, we could institutionally create more spaces for deliberating over our ethical concerns. Their repeated articulation may just provide that extra degree of ethical engagement for our community at large. I think the angst and distress that we collectively feel about any conscious and sustained embracing of attitudes and rationalisation that are seemingly impervious to ethical arguments, suggests to us that such institutional spaces can be created.

With inputs from Neha Chaudhuri, Bhavini Pant, Damayanti Bhattacharya and Jaya Joshi ∎

OPINION

IIT Bombay's Affirmative Action

∎ **JOACHIM BREITNER** Visiting Student from Germany, Computer Science Engg.

IIT Bombay not only teaches but also houses its students, and puts into effect a number of rules and policies. One of the more prominent rules affects the interaction between boys and girls in particular. For example, Hostel 12 rules state, that "Female guests are not allowed to stay in the hostel between 10 pm to 8 am", and another example is of the multi-purpose hall's rules and regulations, "Athletes are expected to avoid personal relationships between male and female athletes."

Of course these rules are given without worrying much about justifications. Giving justifications would put a serious doubt on the high intellect level among students of this elite institution. So assuming that rules are not put up just for the sake of it, we know that there is a justification and that we should be able to deduce it.

A naive explanation would be that girls need to be protected from boys. This theory is easily disproved by the fact that female guests are allowed to stay in boys' hostels between 8 am and 10 pm without problems. Maybe

a slightly less naive explanation would be that boys need to be protected from girls. But again the same argument invalidates this theory.

It seems to be tougher than expected to come up with an explanation, and we will have to try harder. Given our academic standards, though, we should not give up easily and try a more systematic, scientific and logically sound approach than just guessing theories.

We first observe that these rules are strictly about the interaction between a female and a male student. Therefore, something must be special about this two-person constellation – but special compared to what? Obviously, special compared to the other possible constellation, that is: relations between two male students or between two female students.

We also observe that other kind of relationships are actively encouraged by the institute: Boys are put in the same hostel as other boys, and sometimes made to share

a room. The same rule applies to girls. Having the messes situated as parts of the hostels also ensures that even the very important social activity of eating is done together with students of the same gender.

Before we deduce from the observations the rationale behind the rules, let us recall the definition of the term "affirmative action":
"Affirmative action refers to policies that take factors including […]
gender […] into consideration in order to benefit an underrepresented group."

This affirms the intention: that IITB is following a policy of affirmative action towards same-gender relationships by encouraging their genesis, while enforcing rules to make heterosexual relationships less attractive. Under these circumstances, if a student had to decide between a partner of the other gender and one of the same gender, both equally attractive with respect to other considerations, he will surely pick a person of the same gender, thanks to this rule.

Now that we understand these policies better, one can ask: are they effective? Specific numbers are hard to obtain, and we cannot know what happens in the double occupancy rooms of the hostels, so here is my suggestion. Observe the students walking on the streets of the campus and count: how many boys are holding hands or putting their arms around other boys? How many girls occasionally touch other girls? And, in contrast, how much body contact between girls and boys can be observed? You will easily see that affirmative action has been successful.

We should be proud to be members of an institute progressive enough to actively and openly support and encourage same gender relationships between its students! ∎

Illustration by Utkarsh Raut, First Year Mechanical Engineering

Disclaimer: The views expressed in these articles are those of the author's and do not necessarily represent those of IIT Bombay or of Raintree
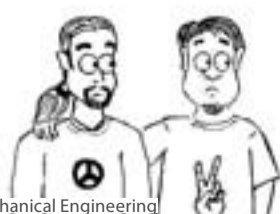
Pagalkhana

■ Introduction and compilation by **DAMAYANTI BHATTACHARYA**
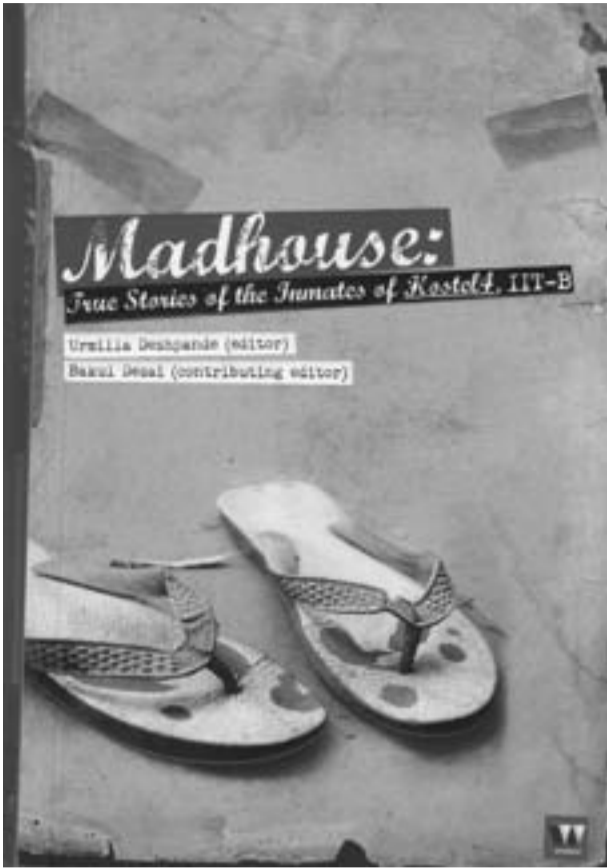
Book reviewed
Madhouse – Urmila Deshpande, editor & Bakul Desal, contributing editor.
Westland Publishing House
ISBN 978-93-80658-64-3

If some of you happened to walk down the main road on 26th December last year, you would have encountered the strange and bizarre sight of a very bald but spry Kashmiri, making his stately way down from the Convocation Hall on a horse bedecked in full shadi regalia. The said gentleman, Arun Kaul, once a student here had adopted an old, careworn horse which he used daily to ride to class. He was here last December to re-enact that episode for the launch of a book from his hostel H4, Madhouse published by Westland and edited by Urmilla Deshpande and him. Harsha Bhogle who was there for the book reading told the audience, "Everybody has a tale to tell about their life in hostel but not like the ones in this book. I am still in a state of suspended disbelief. Are these guys real… how real are the stories they tell… here is my chance to grill some of them and find out." He walked away in awe saying, "So much madness amidst so much erudition."

I had a request from one of the book editors, Bakul Desai to organise an elephant for the event since he wanted to re-enact the story of his attempt to get an elephant for their Final year EP (Entertainment Programme), the original precursor to PAF) and in the process, his encounter with Varadarajan Mudaliar aka Varadabhai, a Mumbai don from before the time D Company took over the turf. Now I have been suckered into schemes by Bakul before; dancing willy-nilly to a distant tune played by this madcap piper. But oft bitten and you tend to get suspicious. So I hardened my heart and told him, "A horse I will arrange but an elephant – I draw the line there." My request for security clearance (you need permission for bringing a hired horse into campus although bulls from the nearest tabela seem to have a free run of the place) ended up at the DD's table and to cut this already long tale short, I got a call from his office, wanting to know why I needed a 'hose' for Alumni Day.

Alumni Day is a busy time at IITBAA and as Bakul's request bears testimony, we do hire, buy and order all kinds of weird things. But for the life of me I could not figure out why I should have ordered for a hose. No Pagal Gymkhana was planned, nobody wanted to do a bare-bellied rain dance aka Esselworld. The good lady on the other end of the phone lost patience with my lame mumbling and said, "Hose, hose, two ears, four legs, one long tail, the one you see at a hose race… if you have not ordered one, then why is a letter with your signature requesting security clearance for one lying at

our office?" Ah, horse. The penny dropped. Just goes to show that strange encounters abound when you hobnob with this mad crowd who have contributed stories for this wonderful book called Madhouse.

Most of the stories covered here are in a time-line of less than ten years (roughly a period ranging from 1972-1985), out of IIT Bombay's more than 50 year history. It's an unputdownable book, particularly for the young at heart. Even if you are not an IITian and have never been a hostelite you are bound to love this collection of comic cameos. It has been reviewed by almost every newspaper in the country but at Raintree we still decided to do a review even at this late a juncture, as this is a review with a difference, from people within the IITB family. Also, you know what they say – it matters not what others say about you, but what matters most are the opinions of those closer to home. So here it goes:

"7:37 pm: Received three copies of Madhouse
7;45 pm: A major scream of laughter in a quiet Detroit suburb. Chaos continue for one hour.
4:45 am: Reading Madhouse in toilet. Another LOL. Neighbourhood disturbed and pissed. Am now worried that police will be at the door.
5:00 am: LOL continues. Should I really care about police? That ends my review of Madhouse. Thanks guys."
Nitin Anturkar, B.Tech, 1982, Chemical Engineering

"Though I was gifted with Madhouse for my house-warming ceremony, I could not read it because it was monopolized by my daughter first, followed by my mother and then finally, my sister. I got my chance to read it on a flight to Kochi and had to sit up most of the night to complete it. Could not put it down. I could understand why my 75 year old mother and my 20 year old daughter enjoyed it equally".
Vijaya Rao Verma, M.Tech, 1983, Electrical Engineering

It's not just the old timers who could relate to this book. **Deepu Panicker** a current student from the Department of Mechanical Engineering at the institute thinks that this is a book written by erstwhile "delinquents" and that "there is no real storyline". He continues, "Yet as a student of IIT B, I felt an instant connection to the story because of the familiarity and the knowledge that this is what we would have been like if we lived in those times. Well maybe not so insane, but a little? The book in two words is a laugh-riot. Some of the stories are downright hilarious and will make you LOL and ROFL and LMFAO for hours afterward. Even the most adventurous people among us now would probably not have lunacy quotients close to what these guys had. All in all, a great read for any occasion and very hard to put down."
The appreciation seems to run across IITs. **Jitender Kanwar, IIT Delhi** writes to Bakul:

"I am about half-way through with Madhouse and marvel at not only your survival skills, but also at your thriving skills!! The interesting thing I noted was that you did actually seem to have kept yourselves incredibly busy in your five years there, doing whatever it is you did. Normally goofers tended to spend their time in a smoky haze, or some in bridge or 3-patti, and most of it at night time. Thankfully, we guys at IITD were a tamer lot, though it revives our own memories all too well!

It is not just the irreverence and the about rampant humour in the book that makes it special. An interesting trivia: the word virtue appears in the book only once. Madhouse is also a slice of history of IIT Bombay with experiences that are varied and sometimes unbelievable, but it successfully renders the place and its people human and accessible. From fishing to attending lectures on a horse, a former Chief Minister travelling ticketless in Mumbai locals, from IIT students driving Mumbai locals during a All-India railway strike called by George Fernandes to swimming in Vihar lake and returning in underwear after being picked up by cops, they are weird and don't come better than these."
From **Amit Paranjpe, B.Tech, 1993, Mechanical Engineering** who posted on Facebook:

"Just started reading Madhouse. What a great book! Even though I am from a different hostel (H6) and decade (89-93), I could relate to all the incidents very well. Liked the short-story/anecdotal style. Hope you publicise this book aggressively. This is so much better and realistic than some other recent fiction books and movies, written about IITs."

Thanks to Madhouse, Bakul has risen above us hoi poloi and seems to be hobnobbing with the Page Three set.

Shobha De, the original mistress of wicked tales writes thus, "I completely and totally love what I have read. You should write a seriously wicked book for me." Her terms of intimacy with our man seem to be such that apart from being on a first-name basis with him, she signs off with a casual 'De'.

Nidhi Razdan from NDTV feels that she "lost out on a great opportunity and hopes to make it up with your next book", and **Geet Sethi** wrote to him thus: "Saturday night I commenced reading and I was hooked…"

Clearly, the madness of Madhouse transcends IIT junta. The reason for this perhaps has been best encapsulated by **Sudha Sadanand**, TV personality and former editor with Penguin:

"Fantastic… after a long time a genuine coming-of-age book which has all the ingredients that go to make this the most endearing, irreverent and genuine take on youth… It is funny, irreverent, fresh and crazy… revolutionary."

My personal take is that it is not just the unbridled humour or the youthfulness of Madhouse that makes it transcend age groups, interest groups and takes it well beyond the tribe called IITians. The book talks of incidents set in the days when there was no internet, TV, mobiles, IPods and computers and yet the fun element was at its peak. Hence, it is symptomatic of a time perhaps lost to us forever. A Paradise Lost where the colourful tales of the book enables travel to a less complicated era. A time of infinite freedom untrammelled by the immense pressure to live up to parental expectations, where the modern gizmos of the new information age do not let you replace the joys of simple human contact with the dubious pleasures of social networking. Take for instance how **Udit Sood**, a generation-next son of alumnus **Sanjiv Sood** (B.Tech, 1983, Civil Engineering) writes to his father about the book:

"I've just finished the book. And I'm terribly disappointed that it got over so early. This book is beyond brilliant. The last time I've read a book I could not put down was when I read a P.G. Wodehouse (that too a Jeeves or a P. Smith, the others I can put down). I'm not even kidding you. I could not put the book down. In a way its good it's over. Now I can go back to finishing my engineering.

Amazing book, Dad. And the best thing is that it isn't like I'm reading something. It's like I'm watching a TV show with many episodes. There's always that 'what did they do next' feeling. The stories are downright hilarious. And the flow of the whole thing is superb.

Looking back, your stories may not have been as funny if they happened in today's era. Bakul Uncle could just have googled, 'Elephant hire near Powai' and that would've been the end of it."

To conclude, H4 Madhouse is as the Midday quoted "the original Baap of Three Idiots" and if you wish to procure a copy, do step into the IITBAA office at the Gulmohar building, or order one online at *http://www.iitbombay. org/initiatives/hats/hostel4/madhouse-book-order*

All proceeds from the sale of books through IITBAA go to the hostels. ■

About a week back

■ **BODHI VANI** First Year Undergraduate, Chemistry Department

About a week back, we were sitting around the oval table at the PRO office eating those fantastic samosas we get at Raintree meets, when the PRO decided to fling her empty 'Random Meanderings' rectangle at me – on a whim, I'm sure – unfortunately confident that I'd fill it successfully. Now I'd already written two articles, one rejected for being too outspoken, and the other for being too… outrageous. This was my chance for redemption, so I spent about a week poring over what I could randomly meander about, and wrote out a list of the little things in life at IIT to ramble about.

I thought of penning down all the charming (read: shocking), amusing (read: appalling) anecdotes from the late nights we've spent at the H2 lounge and mess post our debates, all the lukkha we've kataod, the intensive Snatch sessions we've had there and at the Shack(a fast-paced word game that has taken the campus by rage). I even longingly thought of writing about the friends I've made over these months, all of whom are unstable, barmy, batty, fantastic freaks – an overgrown child, a guy who climbs every tree and scales every wall for the heck of it, a chronic kleptomaniac with a thing for number-plates, hostel plates and tyres lying on the street, trivia-hungry barbaric quizzers – not to speak of a whole host of temperamental geniuses. Oh, the deeds we've done, the conversations we've had. These people make the best times at IIT, and make the worst a little better than they would be otherwise. I considered talking about the agonising, torturous process of hostel and institute elections. Imagine trying to make that a fun, light read! I considered a verbose little article about

Illustration by Utkarsh Raut, First Year Mechanical Engineering

We often claim that IIT by itself is different from the outside world – an island world. Which IIT do we really mean?

the trials of trying to sleep in class without your friends destroying it for you – and of course, keeping it hidden from the professors. But when I went to the editor with these possibilities, she waved them off as 'too student oriented', almost like swatting away a couple of rather annoying mosquitoes.

Wait, what? Wasn't Raintree the 'campus magazine'? Exactly, she said, and there's more to the campus than just student life, you know? It seemed an incomprehensible idea that the campus didn't, well, belong to us. It isn't egotism, or egoism, or the arrogance you'd assign to it – it just is. To us, we define IIT. Perhaps the other campus residents feel the same about themselves? But it sure took me time to adjust to the fact that IIT wasn't just students and professors – and that too professors who existed only within the green-fenced academic area and moodle.iitb.ac.in. As I flipped the pages of last time's magazine, I even realised that I usually skip articles which aren't student-authored. The sheer alien un-relatability of them keeps me away from them, because honestly, how many of you actually felt for the paragraph above this one?

We often claim that IIT by itself is different from the outside world – an island world. Which IIT do we really mean?

On Saturday, we decided to scale the heights of the IIT landscape. We went through the staff residences, saw the unimaginable sight of children running about through the construction workers' temporary residences, and then the untamed roads that lead to Sameer Hill. We trekked up, not for the first time though, so this time we were less overwhelmed by the thrill, and stopped, at regular intervals, to enjoy the view. We pointed out our hostels, the main building, the lake, SOM and KReSIT. One of my friends could even see his wing. These places, our world, could be traced along a wobbly line on an edge of the campus. The rest of it was hazy. We often claim we can walk through IIT blindfolded. It turned out that I couldn't even decipher most of the buildings from the view over Sameer Hill. I can recognise the places I know with ease, the rest remain startling surprises. There are two sides to everything, even the campus view. We know the student side. To most of us, it's the only side that matters, and just like every other stance we seem to take, it is isolated. ■

POETRY

From the Window of a Train, Puttaparthi Bound, July 2010

■ **PROF. (RTD.) GIRIJA RAJARAM** Associated with CSRE

Oh smiling land so lush and green
God's Sunshine bathes you in light
This land it is that farmers plough
To make it yield Treasure bright

How often do we realize the farmer's role
In keeping us happy and fed
For if he did not wade in sticky mud
How would Earth yield bounty and bread

Neat brown furrows curving on fields
Where lush green plants abound
With rain the bushes grow day by day
Tall and strong all around

And when the bounty is harvested rich
And to our table finds its way
How many of us think of the Power around
And the farmer who toils over the day

Oh smiling land, so green and gold
Interspersed with trees
Teach us mortals wisdom to seek
God all around, in birds, beasts, and bees

PERSPECTIVE

An Imploding Institute

■ **ASHWATH KIRTHYVASAN** Fifth Year Undergraduate, Aerospace Engineering Department

Since this article comprises only of the student perspective, it might be biased. Attempts were made to get in touch with the concerned authorities for their comments, but I did not receive any response from them on the article.

The question of moral responsibility is one that is sensitive and subjective. The government in all its sensibilities decided a few years back that students from all sections of society should get the opportunity to go to this wonderful school called the Indian Institute of Technology. It was decided that there must be reservations for people from weaker sections of society and at the same time an increase in the number of seats in each IIT to ensure that the general category students are affected in no way. While I endorse the government's idea to ensure concessions to the weaker sections of society, it is also important that the seat rise is backed by requisite infrastructure. As always, we fail in implementing our well thought out policies simply because as a country, we fail in implementation.

The institute has a fixed amount of space which implies that there exists an upper limit to the number of buildings in the institute, and therefore of professors and students who can live and work here. While this number was much lower about a decade back, the increased intake in the past few years has put the system through a great deal of stress. Class sizes are much bigger with some courses now running in the Convocation Hall; the entire batch snoozing away happily.

With students being compelled to share rooms till their third year and poor mess facilities, the mood in the hostels is bound to be grim. The institute is on steroids as far as construction is concerned, but unfortunately it is not happening fast enough to handle the greater number of students. The lack of space is an issue which both faculty and students face. Many of the new professors haven't been allotted houses and have to live in the staff hostel for considerable periods of time. To expect a professor to live in a hostel, then to go to laboratory, do research and teach hoards of students is indeed a tough expectation. As quoted by a professor from the Department of Aerospace Engineering, "In the earlier days, a professor was paid primarily to teach; today he or she has to worry about research, publications, promotion, funding and many other factors. With so much stress, how do you expect him or her to teach?"

We've tried increasing the number of professors and classrooms. While we've managed to build spanking new classrooms (read: VMCC), it is proving to be herculean for the institute to recruit more professors. When I look back on my days as a fresher in this institute, I am proud to know that I was the last batch in which the first year professors used the good old chalk-and-blackboard teaching method. Contrast this to the present day when a professor teaches from slides, zipping through the curriculum with no option but to leave the students in disarray. Even with the professors teaching slowly and patiently in my first year, I found the Math course hard; I can only imagine how the current students feel about the course.

The cut-offs for students have dropped since the seats need to be filled. As a result it may be easier to get into IIT, but students are finding it increasingly difficult to handle the first year course load. A fresher tells me, "I am surprised I got into IIT after getting four marks in my Maths paper." Later when I asked him why he fared poorly in his first semester, he said, "I didn't know calculus when I came here, so I found it very hard to cope with Maths."

While IIT is clear that it will take students with low cut-offs, it doesn't exactly have a plan on how to deal with these students when they are unable to handle the load, thus failing in multiple courses. However, a noteworthy effort is being put by a team of professors and students in the form of remedial classes to help the weaker students come to par with the rest. While the effort was a last-minute start,

Class sizes are much bigger with some courses now running in the Convocation Hall; the entire batch snoozing away happily.

it is a necessary start in the right direction. One could take this effort a step further and provide weak students a crash course in fundamental concepts before joining IIT.

Another major problem faced by students is the inability to read and write in English fluently. The JEE Admissions Board allows students to take the exam in various languages. Many students are now facing problems in their courses because they are unable to understand what the professor is teaching in class or the course content from the prescribed textbooks. This again can be solved by having a month-long crash course on English before the students start classes in July. Such courses are conducted by many colleges abroad for students who don't have English as their first language. The importance of knowing English can't be emphasised enough. Right from taking exams to sitting for placements, good communication skills are mandatory. Many companies don't recruit students if they find that they are unable to express themselves in the interview.

Many times, I find myself blaming the institute for a lot of problems I face. In part I feel I have the right to be angry at IIT for not tackling issues quickly and appropriately. However, I concede that it must be difficult find solutions to these problems because the decisions are made in tandem with many authorities together. I empathise with the professors for they too face many problems, unknown to the student community. It's indeed sad that I, a recipient of numerous privileges in IIT have to say these words. ■
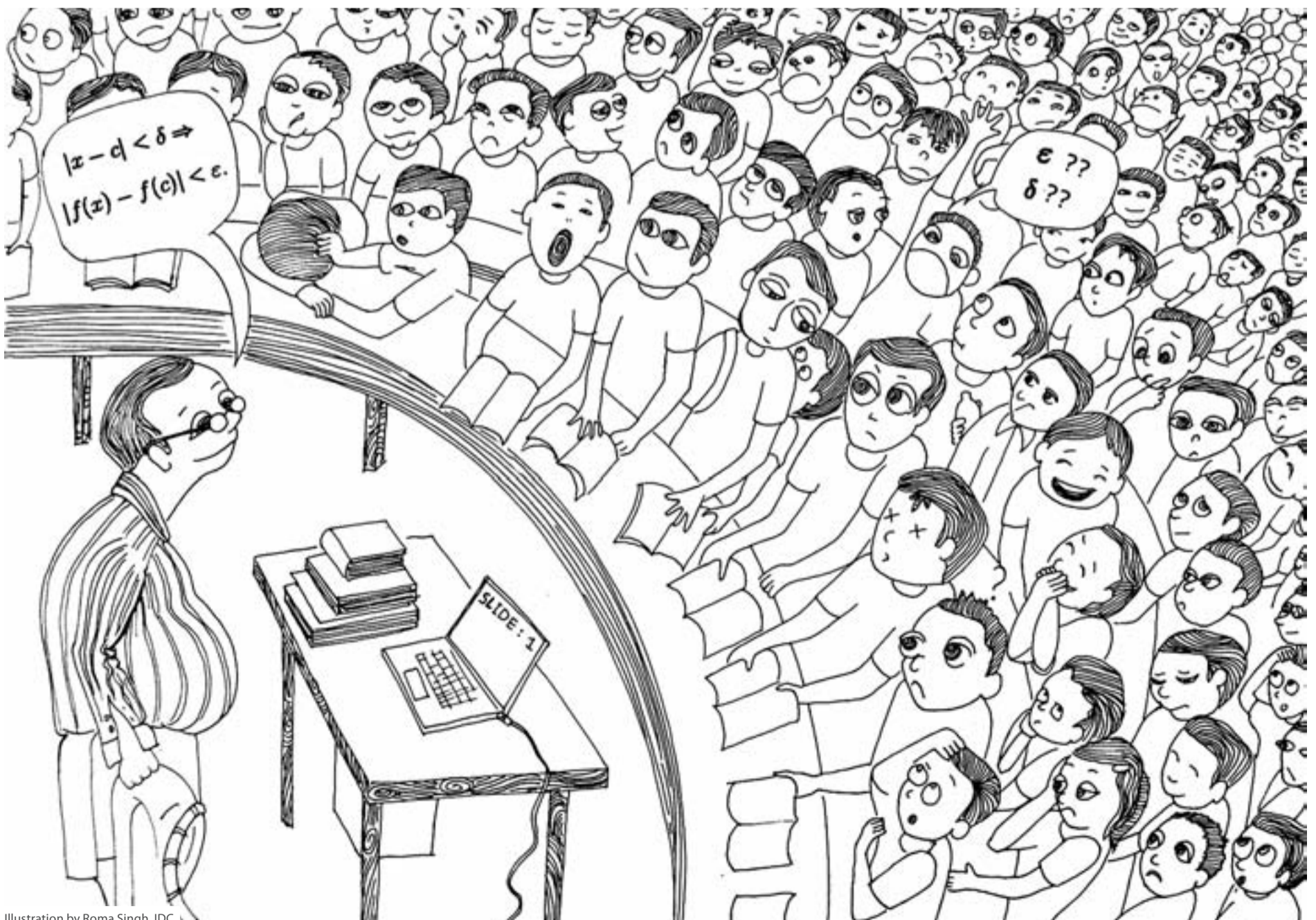
Illustration by Roma Singh, IDC

CTARA: In Need of Technology Transfer

■ **DAMAYANTI BHATTACHARYA**

If you take the small path from in front of the Mathematics department going towards Lecture theatre lawns, at the back (or rather the basement) of the Mechanical Engineering department, you will come across the Centre for Technology Alternatives for Rural Areas (CTARA) workshop. There, standing forlorn like anachronistic throwbacks in a bastion of high-tech wizardry are some strange looking machines and implements. All of them – be it the funny looking tractor, the strange contraptions that all seem to have cycle pedals attached to them or the metal bullock cart sans the bullocks – are dust-free, freshly painted and obviously well looked after. In my arrogant ignorance, I have often been guilty of the occasional smirk or two thinking, "Who in their right minds would be using these bizarre looking contraptions?" It took me 10 years of being here before I managed a visit to the workshop and I have walked away duly chastened and with new insights on what constitutes relevant technologies for India.

Three years ago while researching for IIT Bombay's history book I had come across the Nayudamma Committee Report. It was the second review of all the five IITs instituted by the visitor to the institute, the President of India. One of the recommendations of this committee to all IITs was as follows: "Application of Science and Technology solutions to rural problems can be as exciting as they are in an industrial situation or in a pure research area, and the results could benefit a far greater number of people. It is important that IITs increase their sensitivity to the problem of their environment and relate their activities more and more to indigenous problems with a view to obtain solutions through the application of technology."

CTARA was set up in the very same year the report was published. The stated purpose: to learn and attend to the problems of rural India. Since then, it has developed many engineering devices and tools with an ability to engineer precisely the kind of transformative change for the rural population that the Nayyudamma Committee Report had recommended. Yet, despite its many interactions with the Khadi Village Industries Commission (KVIC), the low-cost, energy efficient prototypes being developed here – and there are many – have not seen mass-scale production or wide-ranging use.

Take for instance the case of the CTARA Bullock Cart; conceived, designed and fabricated in-house. It is a truss structure of mild steel pipes and lighter in weight (170-180 kg) than the traditional wooden cart (250 kg) which is made of wood, a scarce commodity nowadays. It is completely detachable and in a disassembled state fits into a box measuring 1.2 m x 1.2 m x 0.4 m. Later, it can easily be transported and reassembled. It has a longer life and lower maintenance than a conventional cart and even the cost is at par with a wooden cart.

These carts have acquitted themselves well in field trials and the results have shown that bullocks are indeed under considerably less strain than in traditional carts under the same load conditions. Yet, they languish in the workshops of CTARA. As identified by J. Jairaj George, a Lab Attendant at the CTARA workshop, marketing and communications are one of the biggest challenges faced by all CTARA prototypes. IITB may work at technology development and transfer, but in the absence of the requisite public-private linkages between rural micro-enterprises and the private sector agri-business, attending to the problems of rural India is bound to remain a pipe dream.


Global management experts have attributed India's rapid economic growth to jugaad. In the eighties, innovative Punjabis mounted a diesel irrigation pump on a steel frame with wheels, creating a vehicle they called jugaad. The sooty open bonnet and other factors meant that it was not a roadworthy vehicle and lay outside the pale of transport laws. CTARA too had developed its own version 15 years ago. Officially called a 10 HP riding type power-tiller, it is affectionately called the 'jugaad tractor', and is the embodiment of Indian grassroots innovation at its very best.

Its back wheel is a standard issue car differential, its front wheel has been taken from a scooter (bought from API, a defunct scooter company). Its 10 HP engine is from a water pump. A chain and sprocket transmission replaced the conventional gearbox and the clutch plate replaced with the incorporation of two meshing gears. This is a valuable innovation, as it dispenses the need for frequent trips to mechanics for costly repairs, all of which can be done at home by the farmer himself. In addition, it comes with a wheeled trolley and a ground tiller or scraper. Apart from ploughing and harrowing, the tractor doubles up as an irrigation pump and can transport goods weighing up to a tonne. It is ideal for marginal farmers with small farms of less than four hectares and is ultra cheap.

IITB may work at technology development and transfer, but in the absence of the requisite public-private linkages between rural micro-enterprises and the private sector agri-business, attending to the problems of rural India is bound to remain a pipe dream.

With all these innovations, it seems baffling that this fantastic example of frugal engineering has not managed to see mass commercial production. Perhaps its very frugality has acted against it. Eight years ago, CTARA had approached Mahindra* for the commercial production of the jugaad tractor. Its cost of production then was at Rs 90,000. Mahindra had thousands of tractors already in production for the small farms category that sold at the price of a whopping Rs 3 lakh! It makes sense that they would not promote a competing product in the same category that would sell at a third of their product's price. Mahindra eventually got back with the view that they were not really looking to go into the small farm sector, but I am sure the spectre of thousands of unsold goods, languishing in its godowns, messing up its bottom-line must have also been a factor in their considerations. In short, the rural agri-business is good so long as it is about
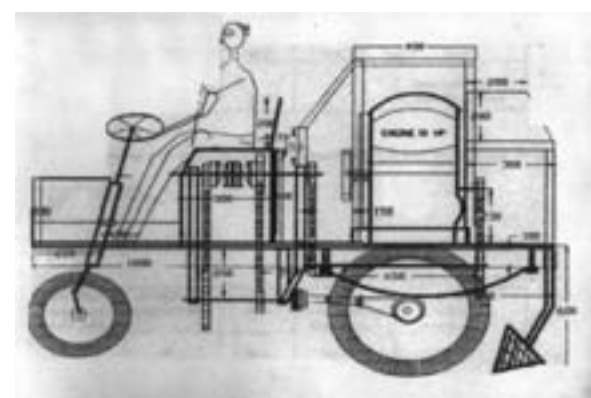
high-cost seed and fertilisers: products, which foster farmer dependence on a company's products but are not about low-cost alternatives that actually foster farmer self-reliance.

CTARA is not interested in the Intellectual Property rights of its products. All it is interested in wide-scale dissemination of its products and the benefit of their end users.

Of the three sectors of economy in India, the tertiary sector has diversified the fastest, the secondary sector the second fastest; while the primary sector, taken as whole, has scarcely diversified at all. Liberalisation of agriculture and open market operations has vast ramifications for two-thirds of the rural farm sector who are marginal farmers. Information Technology, Genetic Engineering and Bio-Technology, which are the 'drivers' of globalisation with their complementarities of liberalisation, privatisation and tighter Intellectual Properties Rights, are bound to create new risks of marginalisation and vulnerability for marginal farmers. In this environment, low-cost, energy efficient engineering devices at CTARA is truly the hardware that can fuel the growth and development of the rural, marginal farm sector. CTARA is not interested in the Intellectual Property rights of its products. All it is interested in wide-scale dissemination of its products and the benefit of their end users.

Much of the IIT system is based upon the western model of research and development, where innovation depends upon scientists and engineers using expensive equipment. Often it might be out of necessity, but even within this system, there are exceptions, where there is no need of high-spending R&D, just creativity and imagination. CTARA prototypes are examples of native resourcefulness, i.e. Indian jugaad at its best. Not content to sit and wait for the government or the private sector to show investor interest, CTARA has taken jugaad a step further.

There is a school of thought here that IITB should involve itself increasingly into a terrain, which has been so far unexplored – extension services. CTARA has initiated supervised undergraduate learning programmes, which have been designed to attract and enable students to do live projects, urban or rural, within the development agenda. These involve direct interaction and interface with the larger society, and formulation of solutions, which could be new gadgets, protocols or studies. Not satisfied with concentrating on just devices and tools – or in other words, hardware solutions that can enhance effectiveness and efficiency of the transfer of agricultural technologies to end-users – CTARA now also concentrates on the software (process) to ensure that the next generation of change agents – be it rural entrepreneurs, engineers, social scientists – can be created. Then again, that is a tale in reserve for another day, a new issue of Raintree. ■

This is a decade old saga. No spokesperson from Mahindra was available to comment on this.

BOOK REVIEW

Straddling Two Worlds

■ **NEHA CHAUDHURI,** Campus Resident
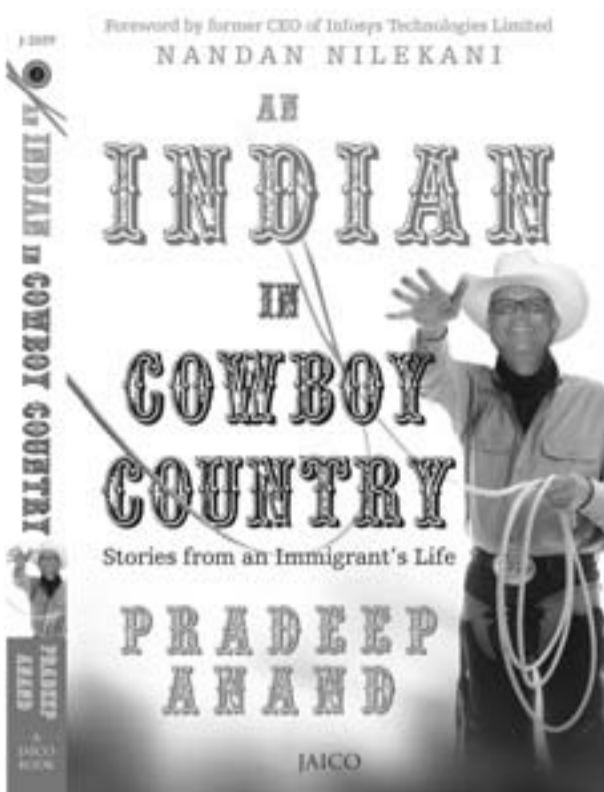
Book Reviewed
An Indian in Cowboy Country by Pradeep Anand
JAICO Publishing House
ISBN 13:978-81-8495-165-3

An Indian in Cowboy Country is a debut novel written by IIT Bombay alumnus Pradeep Anand, about the life and struggles of an Indian professional immigrant to the US. It carries a glowing foreword from Nandan Nilekani who knew Pradeep as a student on the campus.

The novel is structured in episodes where each chapter focuses on one aspect of the struggles of Satish Sharma, the protagonist, as he goes from being a student to a man sure of himself, with a great circle of co-workers and a happy family. While the language is simple and makes for an easy read, I would have liked to see more of the central character's inner workings as he went through different stages of his life.

Satish is the quintessential middle-class boy-turned-man for whom hard work is a habit and humility, a custom. Right from the first chapter where he, though tired of the night-out, consoles Kutty (an exceptional character) into the early morning, to the job hunt in Texas in the latter half of the book, he is shown as a protagonist who cares about people. However, the struggles in his personal and profes-sional life are externalised. For example, in the chapter titled 'The Pilgrimage', the author writes that Satish "could not ignore the yawning gap between the sleazy side of his professional life and his principles" which ultimately leads him to apply for a work-visa to the US. As a reader, I would have liked to see the troubles Satish faced in his professional life in India and how he came to the conclusion that going to the US was a better option.

The struggles of Satish's professional life in the US are better documented than his similar struggles in India. In two chapters – 'The Interview' and 'The Hunt' – the first one chronicles in detail Satish's fight with discrimination whereas the latter is about his considerable and tedious hunt for a job. The backdrop of the oil and gas industry which forms the setting for these professional battles is quite realistic. However, on the personal front, when Satish faces a backlash in the form of a bad relationship and marriage abroad, his doubts about going home and the ensuing conversation with his family are endearing.

People who live between countries and consequently between cultures have to straddle both with their

> **People who live between countries and consequently between cultures have to straddle both with their often contradictory dictats.**

often contradictory dictats. However, his enthusiastic family constituting of his parents, sister and brother-in-law leave no stone unturned to find him a 'good woman' in the two weeks that he is in India after ten years of being abroad. Finally, he does find a wife and the book ends happily with a strong job and a happy family at home. It is too neat an ending in my opinion.

Pradeep Anand was born and brought up in Mumbai. He has lived one part of his life in India. After his move to the US, the second half of his life unfolded in Texas, amid the oil and gas industry. Though the life of the protagonist closely follows the life of the author, the author claims the book is pure fiction. He lives in Houston, Texas wth his family and is the president of Seeta Resources. ■

Disclaimer: The views expressed in these articles are those of the author's and do not necessarily represent those of IIT Bombay or of Raintree

SALT AND PEPPER   ■ **PROF. ARUN INAMDAR**

" ...'n replace that Karma crap by a business model if you want some audience to hang on till the end of your talk! ... "

'ETHICS & SOCIETY' By Anamar

HIDDEN CORNER

From Chaddi-baniyaans to External Hard Drives

■ **ANTARIKSH BOTHALE** and **ANASUYA MANDAL** Fourth Year Undergraduates, Mechanical & Chemical Engineering Departments

While most students know about Disha Stationery Store, most other residents of the campus are unaware of the existence of this tiny convenience store housed in a small room in H12. One visit here and you would be awed by the veritable treasure chest this place is. From the quintessential chaddi-baniyans to luxury electronics like 5.1 surround sound systems and iPod earphones, this place has it all.

> **We have a sort of monopoly on External Hard Drives here. Even people from outside come to buy them as they are around 5% cheaper.**

The store is run by Mr. Himesh Chheda, a cheerful local from Dombivli who had a stainless steel business before coming here. He has been manning the shop (which started as a small STD booth in the pre-mobile phone era) for the past six years. Ask Himeshji about his shop and you can see him beaming. "It is a one-stop solution for all your everyday needs (and more), whether you want namkeen, pen-stands, disposable plates/cups or just plain bathroom slippers. We have a sort of monopoly on External Hard Drives here. Even people from outside come to buy them as they are around 5% cheaper," he explains proudly.

Take a look at some of the more curious things we found here – a USB vacuum-cleaner with brush attachments to clean your keyboard/screen, Venetian masks, a USB pow-

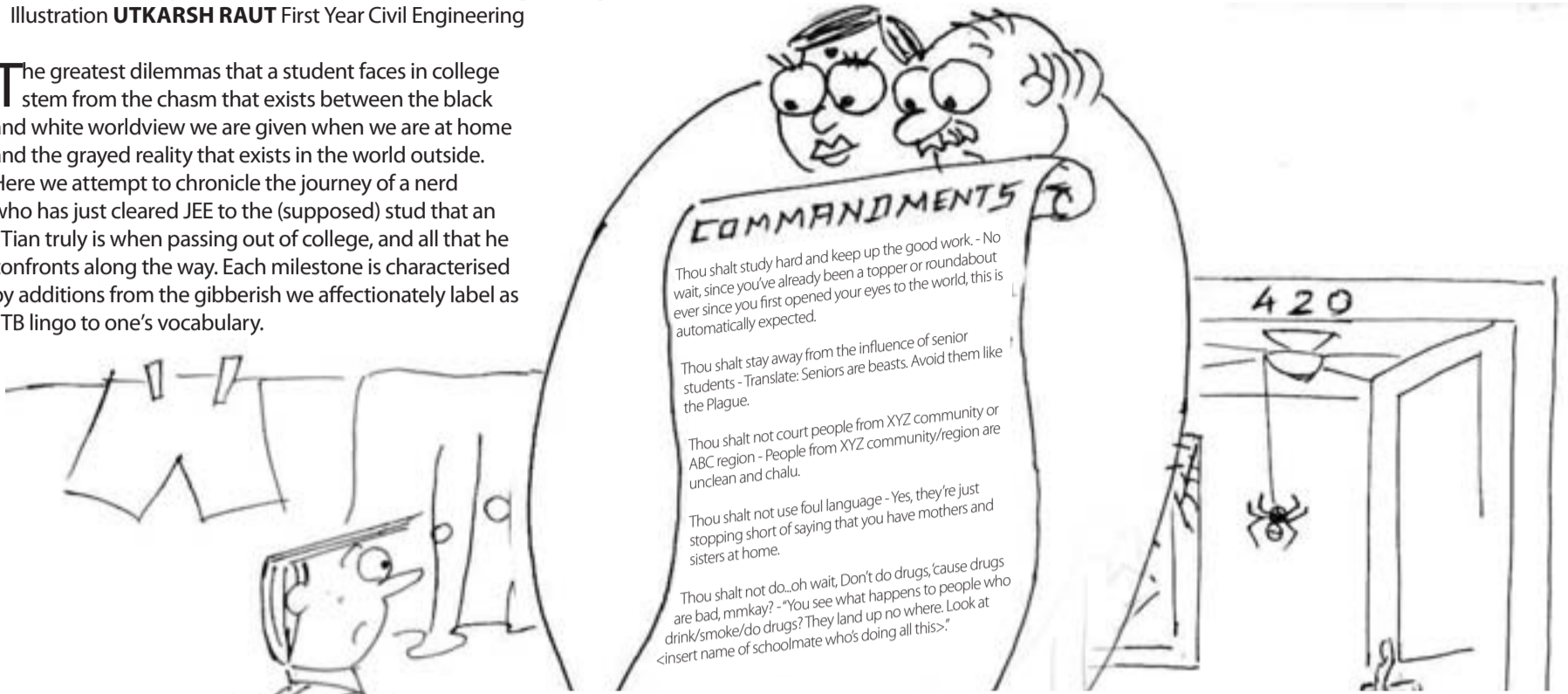Photograph by Nikhil Khandelwal, Third Year MEMS

ered mini-hot-plate to keep your coffee warm, customizable mugs and mementos, computer RAM chips ("you want 1 GB or 2 GB?") hung alongside shampoo sachets and of course, sports equipment.

Readers, please take note: the next time you are looking for everyday stuff, make sure you check out this mini-store before heading out of campus. ■

The Wonder Years: From Nerd to Nut

■ Concept and Copy **MOHIT SHARMA** Fifth Year Civil Engineering
Illustration **UTKARSH RAUT** First Year Civil Engineering

The greatest dilemmas that a student faces in college stem from the chasm that exists between the black and white worldview we are given when we are at home and the grayed reality that exists in the world outside. Here we attempt to chronicle the journey of a nerd who has just cleared JEE to the (supposed) stud that an IITian truly is when passing out of college, and all that he confronts along the way. Each milestone is characterised by additions from the gibberish we affectionately label as IITB lingo to one's vocabulary.

COMMANDMENTS

Thou shalt study hard and keep up the good work. - No wait, since you've already been a topper or roundabout ever since you first opened your eyes to the world, this is automatically expected.

Thou shalt stay away from the influence of senior students - Translate: Seniors are beasts. Avoid them like the Plague.

Thou shalt not court people from XYZ community or ABC region - People from XYZ community/region are unclean and chalu.

Thou shalt not use foul language - Yes, they're just stopping short of saying that you have mothers and sisters at home.

Thou shalt not do...oh wait, Don't do drugs, 'cause drugs are bad, mmkay? - "You see what happens to people who drink/smoke/do drugs? They land up no where. Look at <insert name of schoolmate who's doing all this>."

You arrive at your hostel gate and the first thing you notice is seniors running off to class in dirty clothes and slippers (but the security officer told us to wear shoes at all times!). Enter the mess and sundry relatives of random juniors and batchmates are being made to do unmentionable things by way of phrasing. You almost recoil in horror and disgust at the unprincely language being used at one of the premier institutes of the country. You go to your room and oh-your-goodness, you have a person from the same unclean XYZ community for your roomie! No hassles, you'll deal with it, or so you tell yourself.
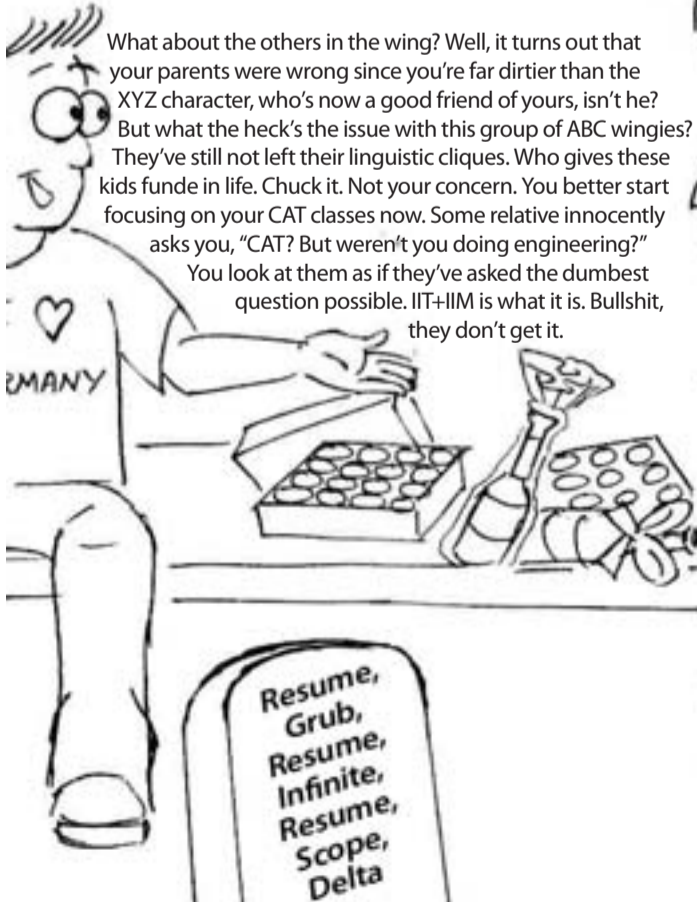
Now you've decided to study after NSO in the evenings but every time all your wingies are at your room discussing some burning or not-so-burning issue of the day, by the look of it, while all they all are really trying to do is to bond. You want to sleep at 11 to get up in time to bathe and have breakfast for tomorrow's 8.30 class but you fear being left out of the great discussion that's happening two rooms down, where everyone's laughing and someone's case is being taken. You miss next morning's class, and the fear of XX means that you just have to ask someone to proxy-sign for you. And the second lecture quiz at convocation hall, it's not as difficult to cog you know. You might as well have fun now and look around a bit during the quiz - The Harm Principle says that as long as no one's getting harmed, you're not doing anything wrong. Then there's Physics lab. Fresnel Biprism experiment. There's no way in heaven you're ever going to get the correct reading for this one. Marks needed desperately because as it is experiments have been allotted unfairly and you were unlucky enough to get an impossible experiment. It's justified for you to tinker with the reading a bit. It is totally justified.

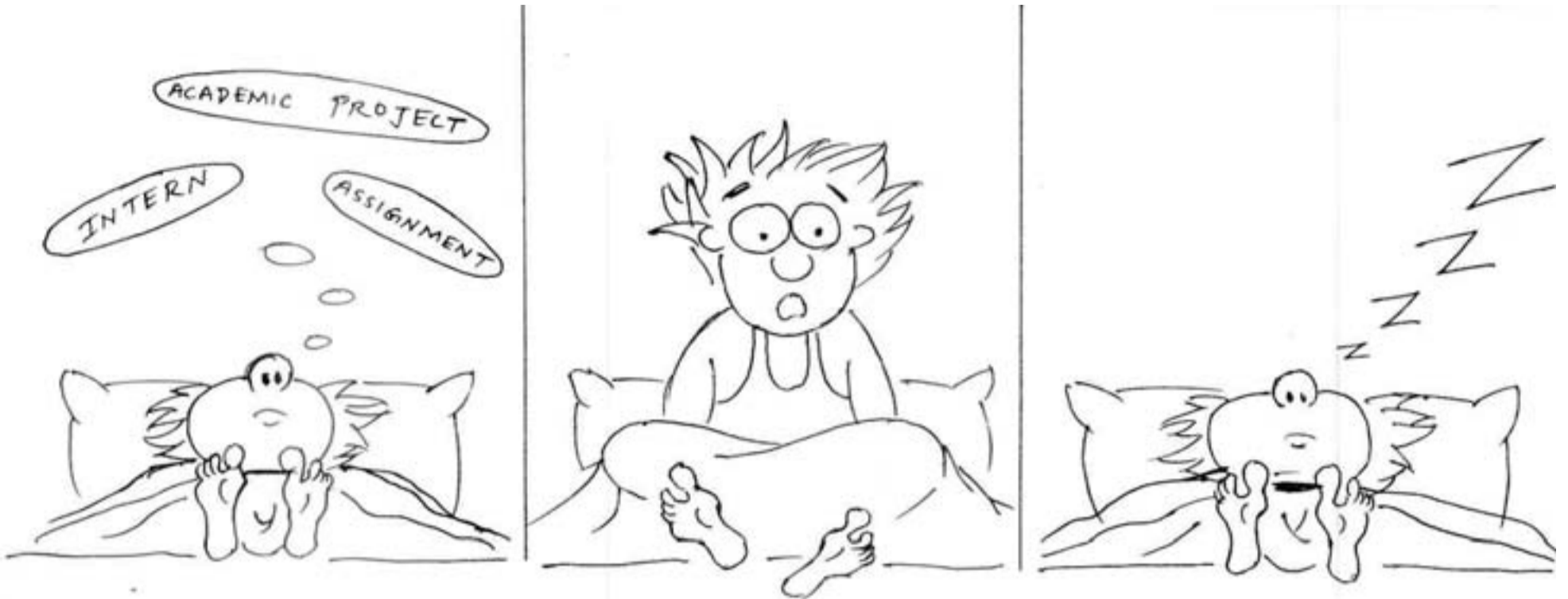*Arbit, Fatte, Freshie, Fart, Lukkha, YP, cycle*

A couple of wing seniors return from their foreign interns with chocolates and scores of tales. Man. You just have to go for a foreign intern. The sights, the scenes, the name, the checkbox titled "foreign university intern" and the exquisite crowd. What do you do? Your resume's not as good as most of your peers. But it's okay, you're in your third year. You've seen it all, and you know what is to be done and what isn't. You take on some inconsequential PoR to shore up your resume just that extra bit. You also take up a Minor/Honour/SLP for the same reason. Assignments/attendance are not hassles for you, you've learned how to beat the system with ease. You'll figure something out.

Oh also, the senior has also gotten the good stuff from wherever he went. Duty free implies two litres of exquisite alcohol. Taste karna toh banta hai yaar. And it's not like you're becoming a regular drinker and all you know, this is a special occasion and a heck of an expensive bottle of single malt whiskey.

What about the others in the wing? Well, it turns out that your parents were wrong since you're far dirtier than the XYZ character, who's now a good friend of yours, isn't he? But what the heck's the issue with this group of ABC wingies? They've still not left their linguistic cliques. Who gives these kids funde in life. Chuck it. Not your concern. You better start focusing on your CAT classes now. Some relative innocently asks you, "CAT? But weren't you doing engineering?" You look at them as if they've asked the dumbest question possible. IIT+IIM is what it is. Bullshit, they don't get it.

BTW.... WHERE DID HE DO HIS INTERN?

YAVATMAL..

KORN

KORN

Resume, Grub, Resume, Infinite, Resume, Scope, Delta

You've scraped through your first year and even managed a seven point something! Phew! But where did that one year go? Wing discussions? Nightouts? Getting cigarette packs from Main Gate for Seniors? Sheesh, sophies already. Different hostel, new seniors. And intro time all over again. First year was a breeze. You've already lost three umbrellas in your first year and someone has relieved you of the cycle your parents so lovingly bought for you. But it's cool, you never rode it anyway, and you'll get an umbrella from somewhere. Or you'll get wet, big deal. Classes start, but it's okay, MI's in December, Techfest in January. If you want to become a CG, you better start working right away. Acads will take care of themselves. All you've got to do is be regular with classes and get the muggu's notes xeroxed one week in advance (instead of one day earlier, like you did last sem).
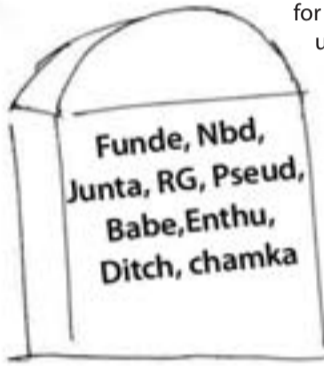
No time for assignments and all this sem. MI/TF/Intern/Acad project/PoR/XYZ. But if you don't submit your assignment on time, you won't get marks. Everyone's submitting assignments on time and yet they're having as much fun as you are, if not more. How do they do it? Cogging a bit from here and there and then intelligently changing data at strategic points. It's not as if the prof's punishing people from cogging. And then, how much really can one stupid assignment help your understanding? You'll study well before the exam and the purpose will be served.

You look at your phone as you snap out of your reverie. Your MI CG's calling. You still haven't finished last week's task and you were supposed to meet him ten minutes back. "Haan aap chinta na karo, woh maine last week hi kar diya tha." Heck, you can lie through your teeth. There's going to be a late night session today. Everyone there smokes. You might just end up being the odd one out, and it is such things, you decide, such little things that make the difference between a CG post next year or none at all. You can't get what you want without compromising a bit - you'll smoke if it comes to it, but only with the boss. That's it.

Phew! Now, Laxmi kaun kaun chal raha hai shaam ko?

Funde, Nbd, Junta, RG, Pseud, Babe,Enthu, Ditch, chamka

Placements! This is what it boils down to. This is what you came in for. Resume making workshops, deadlines, first drafts, revisions and suggestions from seniors, so many so that if someone so much as suggested a single correction to your document, you would puke on them.

Now this is a heck of a packed year. Placements, CAT, SLP, courses, assignments, GRE. Seventh semester calls on you to don your Superman outfit (replete with the red chaddis and cape). You start solving puzzles, reading Economic Times, discussing politics with friends, participating in group discussions and everything else you would never normally do. And at the end of every week you find yourself letting it all out at Sunny(Sip n'Dine) so much so that the waiters know you by name and vice versa. It's a difficult time. And before you can even mourn properly, your CAT date has come up. Soon you realise that there is just no time left for anything! CAT week is also presentation week and you have done nothing for your SLP. You throw in some last minute faff and cog from relevant research papers on one side, while holding on to your quant booklet on the other side, and all this while you're thinking about the solution to that puzzle you couldn't solve last evening. This, is what a mess in life is like.

November end status:
CAT – Easy, but screwed things up.
SLP Presentation – They found out that I'd cogged from a paper but thank heavens that the prof was peace.
*Placements* – Prep's happening. Loads of puzzles solved. Hope is a good thing.

Placement tests are happening. You think it's okay for you to cheat because, well, it just is. It's an intrinsic feeling that you have - these aren't common exams you know. You're united for/against a common cause - you all want to get placed. Day one goes by. Day two. Day n(n tending to infinity). Interviews on interviews. No offers still. The nights are being spent at Sunny everyday now, Laxmi always has some achiever and his job treat. You secretly feel repulsed because you know that you deserved to get placed earlier.

Finally you get a job. You're long past the point where you would pick one company and reject another at the time of application. The last few days you launched your entire broadside and you've landed something. Who cares what it is. You have a job! Last sem's going to be such a breeze. Chuck courses, chuck everything - just get me out of this place. Soon it's valfi time and the tape's played all over again from Day 1 of insti four years back. You were such a noob! Now you're a..err...no, you still aren't the man. But phew, you have funde in life.

Four years is a long time you know! You're sure you couldn't have gotten by without a little help from friends. While studying for JEE there was that sharply contrasted image of every IITian being an achiever by design. You know how unfounded that is. You know how fighting your way through, needling people along the way and being in places you had no business being in, is really what makes you who you are. And that the set of commandments your parents gave you - no, it does not work. The world outside thinks that you're set for life. You have secretly laughed your proverbial head off at the huge gulf between perception and reality. But you know, heart of hearts, that you'll manage. ;)
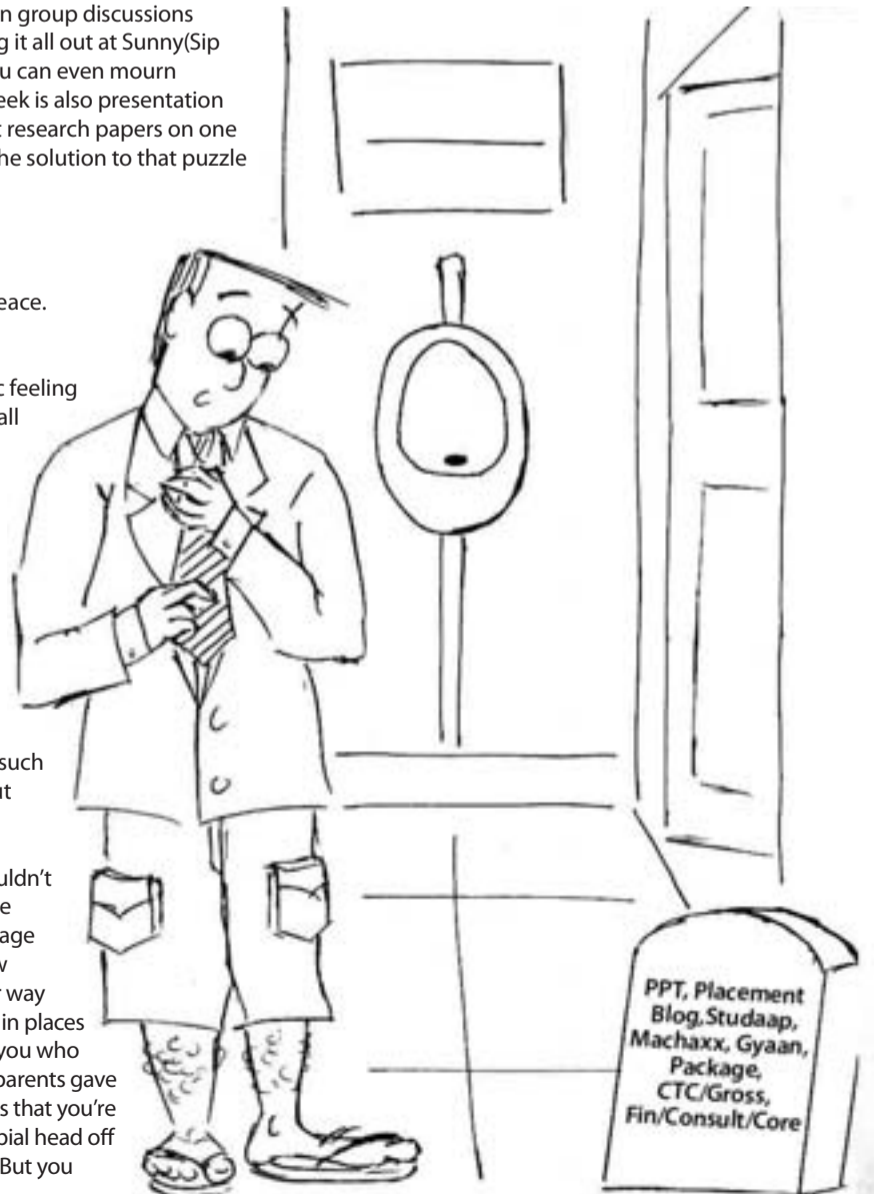
PPT, Placement Blog,Studaap, Machaxx, Gyaan, Package, CTC/Gross, Fin/Consult/Core

Disclaimer: The views expressed in these articles are those of the author's and do not necessarily represent those of IIT Bombay or of Raintree

READER'S CONTRIBUTION # Writ Till I Quit   ■ **TEJAS BODAS** Fifth Year, Undergraduate, Electrical Engineering Department

Look around with an open mind. Unethical behaviour is frustratingly widespread and incorrigible. Now smell the pain and fallacies of your fellows and taste some bitter reality. You may feel like quitting. Surely perturbing times do call for unwarranted actions.

You have a rush of blood to the head and you start speaking out. You brutally attack anything that is wrong, unethical and unreasonable. But this is a deviation from normalcy and you are brandished with the 'un-social' tag. Your seemingly heroic actions are not so heroic anymore. You steadily lose ground as you raise the bar. Nothing works as planned while your support-system caves in. You slowly learn to give up. You learn to guillotine your ethics and virtues. 'Chalta hai' creeps in. The world shrinks, the adrenaline loses steam. What is left is 'a socially acceptable Mr. Somebody'.

Mr. Nobody is an opportunist. He walks with his head held high. He is a glib talker and reads appeasing sections of the newspapers. He is thrilled by pay packages. His aim is to climb ladders and befriend snakes. He questions no one but those below. He begs before no one but those above. He is a courteous charity donor but his social obligation ends there. A promised hand in reality is just a finger tip to him. He cries over suffering but dares to do nothing. His life is optimised towards the unconstrained maximisation of his own happiness index.

I accept being a Mr. Nobody. It is a disgusting feeling and my guts shiver while I think about my zero contributions. There is this uncertain uneasiness now, a combination of too much of remorse over the years of inaction and pity

Illustration by Ankita Roy, IDC

over the fact that I would be survived by millions alike.

But experience says that all this drama is temporary. Quitting is not even hypothetically feasible and I will resume being a Mr. Nobody very soon. But for now, I plan to capitalise on this dilemma with a hope that this writ acts as a potential reminder of the state I am currently in. I sincerely wish to be survived by this writ which, as the years go by will grow into something

somewhat inspiring and motivational.

Someday I will really have to quit. But by then I hope to have done some good for the society and have a positive influence on the lives of others. How many lives is a number that perhaps my funeral will measure. I cannot be as ambitious as, 'when I die the whole world will cry'. But I will feel redeemed if my funeral abounds with people, commemorating a life well-lived.   ■

READER'S CONTRIBUTION # GRA: One Quiet Step at a Time

■ **RACHIT THUKRAL** Second Year Undergraduate, Mechanical Engineering Department with inputs from **KSHITIJ GUPTA** Fourth Year Undergraduate

A few whole-hearted, sincere and energetic men and women can do more in a year than a mob in a century. - Swami Vivekananda

They've been doing their work quietly, so quietly that there is a good chance that only a few people at IIT Bombay know that the GRA (Group for Rural Activities) is teaching unprivileged slum students in the institute. The group was started in 1987 by alumnus Shirish Kedare and since then, the group has been involved in numerous activities. Currently, the group has about 40 active members including some girls too. Their initiatives include 'Teach Me', in which students from Phulenagar slum (next to Y Gate) come to NCC grounds and GRA volunteers help them in their regular studies. The group conducts aptitude quizzes, G.K. quizzes and science experiments and help nurture curiosity among the school students.

These students don't really have a good studying environment at home and hence their dropout rate is also high. To tackle this problem, GRA came up with Abhyasika (which has been running for the last eight years) in which GRA volunteers visit the slums from

Monday through Friday in the evening, and help the students (classes 5th to 9th) with their daily homework.

However, the main aim of the group is to create enthusiasm among students for the nation. After every semester, GRA conducts camps for IIT students in villages where an NGO has brought out creative solutions to rural problems. The camp is also a good opportunity to know about rural India. Last year, a winter camp was organised in Melghat near Amravati. It gave me an opportunity to see innovative projects like Sampoorna Bamboo Kendra, which provides employment opportunities for the villagers based on locally available bamboo, and an innovative schooling system which runs on a minimal budget of Rs 50 day and effectively imparts functional literacy in rural and tribal students in the remotest areas. The group also conducts talks by various individuals to understand the new problems faced by the country and their solutions. Dr Anil Gupta, a renowned professor of IIMA who created a network to provide rural employment based on locally available resources, recently had a personal interaction with the volunteers.

Illustration by Jim Mathew Kochitty, Second Year Civil Engineering

Being a part of the group helped me realise that the real challenge before developing India is creating innovative rural technologies, something neglected by the government but supported by a large number of NGOs.

GRA prefers to maintain a low profile. In the group everybody is an OC (nothing is ever a single person's decision). Every new social initiative is appreciated; for e.g. last year, GRA volunteers managed to collect close to 40 cycles from ex-students, got them repaired and then donated them to school-going tribal children (who like us, don't have the luxury of small distances or tum-tums).

A few years ago, in a public address, our revered ex-President Dr Abdul Kalam expressed a vision that, "Every IITian should adopt one village in the country." It reminded me of the movie Swades. I was happy to find out that keeping this bigger vision in mind, our alumni made a small beginning by opening up a Village Knowledge Centre in a village near Bangalore (source: iitbombay.org). Also, nowadays big corporations are coming up with innovative business plans which help rural development and simultaneously make profit (source: Prof. Ashish Pandey).

Being a part of the group helped me realise that the real challenge before developing India is creating innovative rural technologies, something neglected by the government but supported by a large number of NGOs. The country can't prosper without rural development. We are now realising the mistake we made by adopting chemicals in farming which is not a sustainable option. GRA gave me the opportunity to understand the gravity of this problem. I was exposed to all the good work done by social workers in the country.   ■

Mind over What Matters

■ **BHAVINI PANT,** Campus Resident

PAF Reviewed: Golden Quadrilateral (performed by hostels 2, 8, 12 and 13)

It must have been a thunderous PAF, which compelled both InsIghT and Raintree to write a spontaneous review barely hours after the performance. Intending to stay only for fifteen minutes and leave after sufficiently cheering for a friend, I ended up sitting for the entire performance, riveted.

Possessing the distinct detachment of being a campus resident with no hostel loyalties, judging a PAF based on the complexity of prods, costumes, choreography, etc. is beyond my capabilities. The story and the storytelling is what truly matters, everything else ought to blend in seamlessly. And for their story and storytelling, Golden Quadrilateral was a unique and peerless production to watch and also importantly, to interpret.

Over the years, PAFs have suffered from two chronic disorders: overkill and stereotype. With the pop culture flood to 'be yourself', one would expect that irrepressible desire to express itself in PAFs. What has actually happened is the opposite. PAF's banal track record has prompted the audience to anticipate a certain level of creative bandwidth in a team's scope of thought and delivery. However, Golden Quadrilateral broke those white fences beautifully – when a junior lawyer kept repeating himself, "Yeh case toh ekdam saaf hai, Judge saab, ekdam saaf!" the Judge asked him to shut up at the precise point it was about to become a boring repetition. The storytelling was powerful, the message revitalising and the entertainment cathartic. Stereotypes were second-guessed by the scriptwriter and dexterously avoided. Indeed, there wasn't one cry of "dayaa!" throughout the 80 minutes.

The story of Golden Quadrilateral possessed many typical themes that have been relentlessly portrayed in India's visual media: fighting against corruption, a young man's journey as he comes of age, refusing to accept the experiences and lessons that our previous generations live by. These ideas could have been depicted in another overtly sentimental performance, removed from reality. But Golden Quadrilateral completely shook all the presumptions I have developed about the quality, potential and intention of PAFs.

PAF audiences are in many respects like 16th century Elizabethan audiences: critical to a scratch and quickly bored or roused. In light of this, it was an accomplishment in itself to be able to make them sit up and take notice of a story they already knew about. As a generation, we live in a stupor. Golden Quadrilateral went miles ahead in shaking up the audience and leaving us rattled about the motivations that guide our choices. "Participation is more important than winning or losing" is a piece of advice most of us have approached with skepticism. But Golden Quadrilateral turned that axiom around and gave us a real reason to appreciate it. That it's important to fight, it's important to take a stand even if it is only for your own satisfaction. Golden Quadrilateral has given us an IITian's interpretation of the Gita: feel for a cause and fight for it, irrespective of winning or losing. In our turbulent

Photograph by Rajendra Gawankar, HT

times, this message is particularly fitting, without being preachy or overemotional.

The director, Sameer Mishra (also the script-writer) allowed a thought-provoking, richly layered sub-text to exist in the narrative of the performance. There was ample room for interpretation throughout the performance; it felt like the audience was responding, not reacting. For instance, when Ravi asked Anand for his reasons behind fighting the Satyendra Dubey case, one could feel the audience thinking. The dialogues were well-proportioned, keeping in mind both the character and the message. The choreography was brave and fluent; it meant to convey and not impress. Even though there were times when some dancers faltered for a few seconds, their hearts were in the right place. I want to significantly point out the Cage sequence which was dazzling in its conceptualisation and presentation, as was its voice-over by Mohit Sharma. The song selections and original music performed by the music arrangement team was liberating and integral to the message.

Speaking of faults, perhaps the one area where Golden Quadrilateral failed to impress was its prods. The lift was essentially present to play into the prod credential – any performance could have done without a lift which worried the audience when two people decided to descend on it together. The revolving prod set-up was an innovative idea, but moved with questionable engineering skills. I do know that there were Civil engineers involved in throwing about their deep-throated, arresting voices in the performance, but I wonder if there were any involved in the production department at all. With respect to acting, Kunal Shelar who played Anand's father was possibly the only actor slightly lacking in his performance. Golden Quadrilateral had a strong script; but perhaps where it disappointed was the abrupt way many scenes often ended. Although this depends on the seamless interactions between the voice artists, the actors and the lighting artists, one did feel that some scenes ended in limbo.

But there was immense dedication to detail where it truly mattered. The entire team of Golden Quadrilateral has to be given special importance towards capturing and conveying the ethos of a North Indian environment. Although there was no female presence, one didn't miss it. When it was introduced in the script (Anand and Ravi talked about his sister coming alone from the railway station) it successfully conjured the plight of a young girl alone at night in small-town North India. Whether it was the crass Lipton chai joke, typical of men working in the construction industry or the police officer's "bra-oon purse" Freudian slip, nothing felt out of place, as if it was included in the script simply to cater to the kind of sexist humour an overwhelmingly male audience might enjoy. The voice artists for Anand and Commissioner Bhatia, Mohit Sharma and Ganganjeet Singh respectively deserve special mention for their scintillating vocal expression. They breathed new life into the characters on stage, who also rose up to the challenge of coordinating with them and gave us convincing and commendable performances. Anand may have inadvertently stumbled on the stairs after fighting with his father, but thanks to his intense performance, I attributed his shaky descent to being carried away with anger and betrayal.

The overarching expectation of any audience – the desire to be blown away by a gripping story – was fulfilled. This PAF has changed the rules of the game. It has been a wake-up call, not only in terms of its story and the message, but also in terms of what the audience can now expect from future PAFs. It stood out not only in comparison but also as a performance in itself. From now on, it's not just going to be about how intricate your prods are, or how slick your dancing is, or how smart-aleck your characters are. Do you have a story to tell?

Sameer Mishra and his team deserve congratulations for choosing Satyendra Dubey's story. Mishra intelligently created a fictional parallel of the father-son conflict of ethics with Satyendra's true story. I could not help but marvel the irony between both sets of father and son: one son makes his choices by being inspired by his father, the other son makes his choices by being disillusioned by his father. More importantly, Satyendra Dubey's story needed to be retold to us in a stirring, passionate manner as did Golden Quadrilateral. It is easy for us to forget such stories. For my part, he had been reduced to footnote in the brief history of India's whistle-blowers. A shoddy production of Golden Quadrilateral would have belittled the struggles of this phenomenally courageous young man and his family. The audience would have trooped back, satisfied with their "is desh ka kucch nahi ho sakta" conclusion. This production made sure that we remembered his sacrifice with renewed vigour, in the hope that when the time comes, we think carefully and honestly about our ethics and choices. ■

Photograph by Rajendra Gawankar, HT

What Sir Harold Kroto gave to Techfest

■ **BODHI VANI** First Year Undergraduate, Chemistry Department

Everybody's heard of Sir Harold Kroto – s¬ome just know he's a Nobel laureate, others know him as the man whose genius gave us the third alloy of carbon, the Buckminsterfullerene, and yet others who have read more extensively know maybe a little about what makes him such a great man. And on the final day of Techfest, he imparted to a star-struck (if a somewhat taken aback) audience a little bit of that.

A little bit of what exactly? It's hard to say, except that it left us all awed, inspired, invigorated, and smiling. I plan to do my best right now, to put Sir Harold Kroto's personality in a few hundred words. He calls himself Harry. Quite unassumingly, quite as if he were unaware of the aura of awe that surrounds him, he rushes up and down the stage from the seat in the Convocation hall's first row that has been given to him. He has a strange, pleasant and calm form of enthusiasm emanating from him, as he goes about changing settings on his laptop, checking the projector, the speakers and pretty much everything – much to the embarrassment of the Lecture Series in-charge for technical things. As I watched him from beside the stage, I got the feeling that it gave him pleasure to talk quite conversationally about why it was a good idea

to look for scientific proof, that he enjoyed talking to people, and that he did it with fervour and zest.

Because in the midst of Techfest, where lecturers often come up with complicatedly named lectures about their research, or a product they quite ingeniously invented, Sir Harold Kroto chose to talk about Science and its relevance in today's world – 'Science and Society in the 21st Century'. Sir Kroto's lecture spanned from tongue-in-cheek humour in his jovial claims that science will keep you wrinkle-free and happy (at which point he claimed that Gandalf was as old as him, but so much more weathered) to some outspoken but leveled discourse on the impact that culture and religion have on science. A friend of mine describes it as "an awesome, insightful, and in-depth lecture on nothing at all, and everything relevant", and that's just what it was.

> **For Techfest, lecturers often come up with complicatedly named lectures about their research, or a product they quite ingeniously invented. Sir Harold Kroto chose to talk about Science and its relevance in today's world – 'Science and Society in the 21st Century'**

Sir Kroto is well-known as an advocate for science education, promoting it on a large scale with the Vega Science Trust and Global Educational Outreach for Science Engineering and Technology (GEOSET), which stream their work online. He is especially keen on encouraging careers in science, a lot of which showed in his lecture, where he talked about the importance of science in a loving, parental fashion, infusing the audience with a sort of reverence towards him and his subject. He went on to talk about the dangers of allowing culture and religion's interference in science to go unnoticed, and he advised with alacrity, if some sadness, to not allow in India what Christianity did to science in the US and UK. He expounded on the dangers of allowing entities and philosophies that do not require logic, proof and analysis to pervade or conquer science – and the power that these entities have on people.

The lecture was marvellous for its deeply inspirational nature towards science; it infused awe in the audience. If
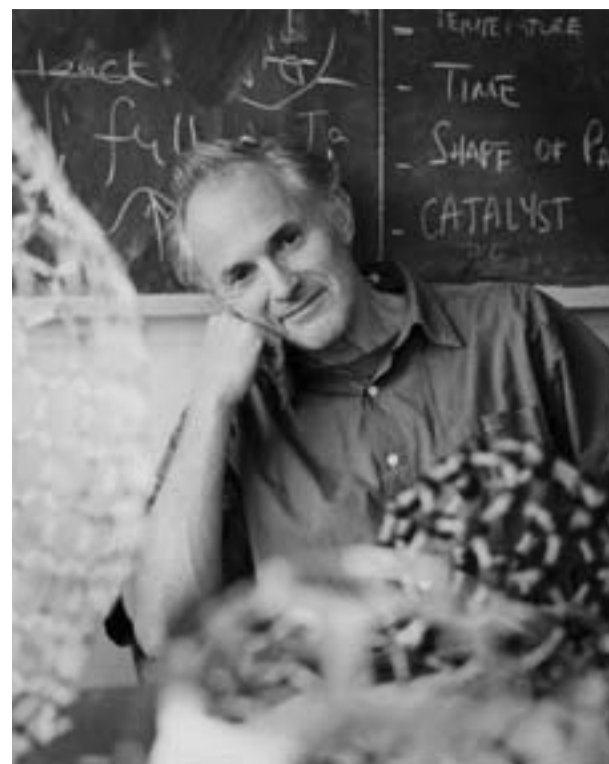
that wasn't enough: in India it is rather unusual to voice your opinion about religion, cultural prejudices and such socially unstable topics, or even to talk so forcefully of the sole importance of science. With his disarmingly informal approach and sprightly examples from all over the world of research, the lecture was a pleasure to attend

Sir Kroto is, apart from many other things (and I do mean many: he is a versatile man to unimaginable degrees) a very public atheist. He is outspoken to the boot, and I say this from reading, prior to the lecture, some very scathing letters he wrote to the Pope. It is rare as such to have your atheism publicly aired in India, so to a devout atheist myself, the dramatic high point of the afternoon for me was when someone from the audience asked him this question: "the Pope says that all men including scientists should accept without argument that god exists and he created us". At this, Sir Kroto's hitherto casual demeanour changed to a mildly serious one. "Well, I ask the Pope," he said piercingly to the audience, "to give me proof!"

What Sir Harold Kroto gave to Techfest was definitive. It was strong and boldly outlined everything a festival celebrating technology and science should stand for. ■

Disclaimer: The views expressed in these articles are those of the author's and do not necessarily represent those of IIT Bombay or of Raintree

Ethics equals Respect

■ **SHRUTI INAMDAR** Campus Resident

The theme of ethics for this issue couldn't have come at a better time. I recently saw a disturbing picture of a woman with a triumphant smile on her face holding a crocodile with its mouth taped around tightly. Others may have been able to see humour in it, but I could not. I'm sure everyone has their personal meaning attached to ethics. For me, ethics means respect.

The recent lecture by Robert Swan was brilliant. During his talk about melting ice caps, he showed his audience a picture of a polar bear barely being able to stand on a piece of ice. The whole audience was appalled and gasped in response. Why did that picture elicit such a strong response? Is it because polar bears are glamorous animals, just like our tigers, that one feels they deserve sympathy and protection simply due to their elevated status? Or is it easy to feel bad for them because they draw out lesser guilt in comparison to all the birds, reptiles and the cattle we have displaced for

our infrastructural needs? We did not feel bad for these animals because we "had" to cut those trees to make way for buildings, we "had" to drive the cattle from their homes on to the roads outside because, of course, how could they be a part of one of India's best educational and technological institutes? We did not feel bad when a young calf, barely equipped enough to follow its mother is made to cross the road with mad traffic that we, being adult humans fear so much. This is despite the fact that unlike them, at least we can understand traffic rules. We haven't noticed how the different types of birds that used to visit us have slowly stopped dropping in. We haven't noticed how over years, the number of fireflies that we could spot during the monsoons have reduced.

Often we do things simply because we have the power to do them. But it isn't necessarily the need for power which makes us do these things, it is insecurity. We can't tolerate co-existence on the same level. Why can't we be a society

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that is unconditionally nice to other humans, animals and trees? There may not be any legal obligations on us to be open, accepting and sensitive to the needs of others around us. But if it is simply legalities that prompt us to behave in a certain manner, then perhaps we need to rethink our ideas of ethics. ■

`PERSONALITY`

The Wizard of With-it

■ Interview with **PROF. DEEPAK B. PHATAK** Computer Science Engineering Department

There are very few at IIT Bombay who may have escaped the phenomenon called Prof. D. B. Phatak. Known for his unconventional teaching ways, he is fondly remembered by his current and past students as someone who can assume conflicting dual roles with ease and zero dilemma. On one hand he is an inspiring teacher with years of learning and jaw-dropping wisdom that one could look up to and on the other he is someone who is quick-witted, 'one-of-us', with or ahead of times, and somebody who can easily tune in to you regardless of your age. Trusted by his colleagues as a problem-solver, he is a gifted orator, adept at making integral and astute observations in discussions of varied natures. His office is a veritable fortress of people, buzzing with preparations for successive meetings. His time comes at a premium and it is almost impossible to get an appointment in one go. Paradoxically, when you do meet him, his disarming modesty and forthrightness leave an indelible mark on you. A big open-source enthusiast, he has adopted the same philosophy in his life, helping people academically and otherwise.

Prof. Phatak's professional life has been lived with the spirit of a renaissance man. Chair Professor, he was the founding head of Kanwal Rekhi School of Information Technology (KReSIT). He has held important administrative positions and is credited with break-through technology applications. Having served on various national committees, he is currently involved with the Ministry of Information Technology's Smart Card initiative. Having been at the institute for over four decades, Prof. Phatak is intimately familiar with the human psyche. He narrated an intriguing incident to us one evening, spurring Raintree to dedicate an entire theme to ethics.

Inputs from **NEHA CHAUDHURI** and **BHAVINI PANT**
Campus Residents

There seems to be a thin line between punishing the mistake and punishing the person. Does that mean we need to look at other ways of discouraging wrong behaviour?
The alternate means, i.e., attempting to glorify good behaviour, do not happen at all. People do not take cognizance of good behaviour because it is expected and it is presumed that unless you're caught, you're behaving well. I think that if there are instances of exceptionally good behaviour, we should acknowledge them. For example, on 26th January, we honour watchmen who do actions beyond their duty, say somebody returning a purse full of money. In a way, I can say that the person was doing his duty. But there was a possibility of temptation which the person did not succumb to. We honour and recognise that. Why can't we do the same for our students? This is not easy but it's a positive way of reinforcing good values.

Writing technical papers and writing exams are two cases where students are most likely to succumb to temptations and disregard good values. In fact, next semester when I conduct the training programme for TAs like I did last year, I will speak to them and will speak to the Research scholars as well on this issue. What is more worrisome is that if this kind of plagiarism goes unnoticed or unpunished, then students may feel this is perfectly alright and the same habit will extend towards other areas of life. For instance, later you may try to book a flat using your official position or pay money to get work done. Corruption, like plagiarism, is a weakness of the mind. It's a perpetual battle you have to fight. I am going to emphasise that this kind of temptation is something you need to learn to guard against. You are the master of your own self. This is the time which prepares you for the rest of your life.

That is why examples of impeccable integrity should be highlighted. Why do we blame the students only, when the system also is faulty? There is a large number of teaching and technical staff all over the country – are they also not tempted? Do they not succumb to temptation? Temptation in later life often involves money and material wealth. But is it fundamentally different from

what the students face. Temptation is about using unfair means to acquire what is most important and desirable. If money and wealth is so for elders, then marks and academic recognition is equally so for students and visible good research output is so for research scholars and for the senior academic community.

Could you give us some real-life examples of 'impeccable integrity'?
How many people know the story of the great Visvesvaraya? He was an engineer and became the Diwan of Mysore. Engineer's Day is actually celebrated on his birthday. As an engineer, when he was on a site visit and was doing some work late evening in a guest house, a friend of his came to meet him. Immediately, he extinguished the oil-lamp that was burning and lit another lamp. Amused by this, his friend asked him, "What did you that for?" Visvesvaraya replied, "That was government oil. This is my personal oil!" Even after he became Diwan of the state, he used the Government car strictly for official purposes, and used his own car for private work. These are non-trivial cases exemplifying high values.

Now how many such important cases do we remember? How many do we recall with respect and honour and consider them worth imbibing in our lives? I'm sure most people have encountered incidents like this from their near and dear ones and from others. But you have to have an open mind, a ready mind. Some of my own lessons have come from some extraordinarily simple people.

That sounds interesting. Could you share some of those experiences with us?
My father was a professor in medical college in Ludhiana and was a stickler for such values. When we visited Ludhiana during vacations, he used to take his grandson with him to college sometimes. One evening, I saw him on the scooter returning from market with a bag containing two boxes of chalks. I asked him, "Why have you bought them, Baba? You get chalks in the college." He replied, "Yes, but my grandson picks up chalks from there sometimes. So now, I will keep these there." This is a small incident but has a strong message.

Another example I can give you is of one Abdul Jabbar. In the seventies, he was Maharashtra chess champion and a renowned national chess player. Jabbar came from an extremely humble family. Once he was playing in a tournament in Mumbai of which I was also a part. At the end of a round, Jabbar asked the secretary of the Maharashtra Chess Association how to go to Zandu canteen in Lower Parel, where the Bombay Chess Association used to have its office. When he said he had some official work, the secretary told him that he could go by taxi; the Association would pay his fare. Jabbar replied, "Jab mein apne kaam ke liye itne paise nahi kharch karoonga, toh Association ke kaam ke liye kaise kharch karoon? (For my own work I wouldn't spend that kind of money, so how should I spend so much of the Association's?) How many government officers today would say that? I have imbibed this into my life as well. At least once a year since then, I attend a conference spending my own money without using any official support.

You've been at IIT Bombay since 1971. Have you encountered any such incidents involving your colleagues?
Oh, there are many. Talking about IIT faculty, I'll share

> **A large number of answers in our examinations are stereotypical, mugged up answers from the textbook. Unfortunately, this is considered perfectly acceptable. What message are we giving out? That reproducing text written by someone else is perfectly fine.**

Photograph by Venkat Damara, IDC

another incident with you. Prof. Sinha, my colleague from the Physics Department was also the warden of H7. On one of the summers, I noticed him often going to H1 for lunch. It was known that his own hostel food was good, and he was also known to regularly visit his hostel each day. One day I asked him, "Why do you leave H7 and go to H1 to eat food?" He replied, "Phatak Sahib, mere hostel mein khaana khaate hue sab dekh lenge, paise dete hue koi nahi dekhega. (In my hostel, everyone will see me eating food but they will not see me paying for it). People may wrongly assume that I am eating for free because I am the warden. That is why I go to H1." Just doing the right thing is not sufficient, appearing to be correct is also equally important. What better example than this?

When you have such people around you, your desire to be absolutely scrupulous in your behaviour and integrity is buttressed for you. I have been fortunate that I have come across many such people. Of course, there are always exceptions. But this is the kind of atmosphere we need to create across the country and in every walk of life.

What do you feel about the culture of ethics on campus? Do you think there has been a change in our ethical standards?
In general, I feel the campus does take the topic of ethics seriously. Wherever there are aberrations or wrong behaviour, people would tend to take action. I wouldn't say ethical standards have lowered or become higher. We maintain our ethics in a general sense. Some things were there before as well, like the temptation to copy existed when I was a student and I suppose, even earlier than that. It exists now when I am a teacher. Good, exceptional behaviour was there in the past. It is here now as well. My gut feeling is that in general, the campus has a good appreciation of ethics.

Let's talk about your experiences with one of the largest campus communities: the students. What are your opinions on the ethics followed by students not only at IIT Bombay, but at large?

Amongst the student community in general, copying is said to be rampant. I do not know why that is so. One incident that happened the year before last was when I was teaching CS 101. It was a very large class and lectures were held in Convocation hall. My TAs caught students cheating on some programming lab assignments. I announced in the class that I had noticed some copying and warned them that they would get a Fail grade in the course as a result of this. Since I would be very sad if I had to fail many people, I announced an alternative that they could write an apology letter, rewrite the assignments and submit them within a stipulated time without getting any marks for them. We had caught about 35 or 40 students. But I got 95 letters! One of the more interesting letters stated that, 'I have reworked the copied assignments myself and learnt a lot while doing them. I wish I had done that in the first place'.

People do not take cognizance of good behaviour because it is expected and it is presumed that unless you're caught, you're behaving well.

What about plagiarism? Does it start at the under-graduate level or does it have deeper roots?
Indian society faces a lacuna in the sense that in general, our written articulation is not well-developed. We find that when we ask our postgraduate and PhD students to write in English, they are unable to do so. Many say that English is not their native language, which is a fact. I politely tell them that this is the case with many others, including me.

I did an experiment to find out how truthful this contention was. For five years, I gave the shortlisted candidates for our M.Tech (IT) entrance a short second test. In one of the questions, I would ask them to write something in English about their family, then rewrite the same thing in their mother-tongue or in any other Indian language they knew. Invariably, people who wrote bad English also wrote bad Hindi, bad Marathi, bad Telugu, etc. My belief, therefore, is that poor writing is a result of lack of mental discipline to write properly. Also, it is language-independent. If you're good in one language, it means you've disciplined your mind to write well and carefully. Then you usually imbibe that discipline when writing in another language. Inadequate preparation on the topic may be one aspect, but invariably, lack of discipline and training in writing is the problem.

Whatever the reason, because people are unable to articulate well, they tend to reproduce whatever is written in a textbook throughout their academic life, i.e. first to twelfth standard and then continue to do so in college. A large number of answers in our examinations are stereotypical, mugged up answers from the textbook. Unfortunately, this is considered perfectly acceptable. In fact, people get very high marks for doing this. What message are we giving? That reproducing text written by someone else is perfectly fine.

Eventually, this goes into the psyche of every individual. When it comes to referencing, we assume that people would refer to a paper and write a gist in their own words. On the other hand, when they end up reproducing something, they feel it is justified because according to them, whatever the author wrote – who can say it better than the author himself or herself? Unfortunately, they often 'forget' to quote the original words.

 A greater temptation sets in at the stage where one needs to produce one's own substantial work. One is tempted to include original work of others as if it was actually his or her own work, anticipating better recognition. Once it happens in a local conference paper somewhere, and one gets by unnoticed, it can very well become a habit. This tendency must be squashed at any cost. This is the kind of 'cultural' training we must offer. We should note that it is not inherently natural for a human being to behave otherwise. This

is because one's natural urge is to optimise – minimise work, maximise reward. I expect that the unique human attributes of curiosity, boldness, perseverance and passion which we see in all young children aged two to five, are preserved and accentuated during education. I also expect that the values of respecting others, sharing and good behaviour are cultural values developed by human society, and must be imbibed strongly amongst the young during education. While Indian cultural heritage supports this view, our education system sadly appears to achieve exactly the opposite. In the context of intellectual property and plagiarism, I think Indian traditions, i.e. our school and college traditions are not very well established. The only things we talk about are 'copying is bad, cheating is bad', etc. I have a feeling that the situation is similar in many Asian nations.

This needs to be corrected. Where I differ with most people is in the sense that the only solution is to bash the heads of wrongdoers. Yes, of course, you must punish wrong-doings. But as a teacher, I've held that you should punish the mistake and not the person. The person is changeable, the person can become better. It is rather difficult because ultimately any punishment does become one which seems to be given to the student instead. Also, one needs to sometimes give an exemplary punishment. But I believe that we must maintain the distinction and give a chance for a student to change ways.

Do you feel that over the years, the temptation to cheat academically has increased among students? How do you approach such transgressions?
You have to have mechanisms to catch such wrong-doings, you have to have the willingness to rap such students on the knuckles and you have to blow hot and cold. With reference to the incident I recounted, I would feel heart-struck if I had to fail so many people, but I would have failed them had they not corrected themselves. I found it more meaningful to give them a chance to correct themselves.

As a teacher, I've held that you should punish the mistake and not the person.

Has copying increased amongst our students? I would say yes and no. If the teachers are careful, then copying can be controlled and temptations can be avoided. But students and particularly undergraduate students are young. If they give into these temptations, I would be concerned but not worried.

The worrisome block is at the Masters and PhD levels where students are adults. Even one incident among them should send alarm bells. By the time they reach the level of Masters, students should have reached a certain maturity and should be reprimanded more strongly.

As you mentioned, cases of copying and cheating are widespread in the student community at large. But have you ever had any opposite encounters?
I have. One incident took place in the same course I spoke of earlier, CS 101, during the Autumn semester of 2009 -10. After the mid-semester examination, I had put up a slide in my class listing the top performers with their marks. A student told me that his friend N's (I have blanked the name at his request) answer paper was under review and he would definitely be a part of my list once he got his paper back. I told him to let 'N' tell me his updated marks, and that I would be glad to include him in the list of honours.

A few days later, I got a mail from 'N'. He wrote that he had got his paper back, but when he checked his paper, he found that the TA had made a totaling error, giving him two marks more than the correct total. His final marks should thus be only 41.5 and not 43.5.

The significance of his admission was rather deep. He was not only ruling himself out from being recognised as a top performer, but was also putting his final course grade in jeopardy (he eventually missed an AA

Role models need not be searched far and wide, or only amongst great names. They are often disguised as normal people, revealing themselves only through small events.

grade by 1/2 mark). More importantly, he need not have acknowledged the correct total at all, as we had 43.5 marks firmly recorded against his name on our score sheet.

How did the rest of the class react to this event?
In the next lecture, I put up his name in an 'extended' honours list, without showing his marks. I briefly recited this episode, and observed that in my opinion he deserved to be in the honours list as well. I asked the class if they agreed with me. A very loud "yes!" from over 800 students in the Convocation hall endorsed my observation.

When 'N' sheepishly stood up at my request, the clapping from the class was much louder than for those in the original list of toppers. It just shows that we all really respect ethical behaviour, even though we may occasionally be tempted to behave otherwise. When we see it, it is for us to recognise, respect and emulate it, if we so dare.

Prof. Phatak ended by saying that in his experience, such admissions were very rare in real life. He added that this coming from a first year student working in an intensely competitive environment was indeed exceptional. According to Prof. Phatak, it is such episodes which make life so enjoyable, so meaningful and so enriching. They go a long way in increasing our own resolve to be scrupulously ethical in our activities. He feels that role models need not be searched far and wide, or only amongst great names. They exist amongst us, often disguised as normal people, revealing themselves only through small events. It is up to us, he feels, to recognise, acknowledge and emulate them, if we so dare.

My generation feels bereft of people we feel enthused to live up to. Like John Mayer says, we're just waiting on the world to change. But it is heartening when someone so knowledgeable in human nature is convinced that greatness is hidden inside each of us. We need not force ourselves to relate to the idols of another generation. We can find our own, we can be our own heroes. ∎

To be fair

∎ **PROF. M. V. HARIHARAN** Retired Professor, Electrical Engineering Department

In the early seventies, Utpal Mukherjee, son of the late and respected Prof. K. C. Mukherjee was a B.Tech student in the Electrical Engineering Department, i.e. the department in which his father was a faculty member. In those days, we used to have a 4-credit course called Seminar in the fourth year of the then five-year B.Tech programme. The student had to choose one of the many topics proposed by the faculty, do some self-study in the library and then deliver a seminar in the presence of a panel.

Utpal selected a topic proposed by his father. One would have thought that eyebrows would have been raised. 'How could that be fair? Will a father's assessment of his son's performance not be partial?' Quite on the contrary. The apocryphal story that made the rounds in the hostels was as follows.

Utpal approaches his father and asks him, "Dad, what grade have you given me?"
The dead-pan reply from Prof. Mukherjee: "Go and ask in the Academic Office." ∎

52nd Foundation Day

IIT Bombay celebrated its 52nd Foundation Day on 10th March, 2011, by honouring the signal contributions of its teachers as well as erstwhile students, who, as alumni, have left their indelible mark on their chosen fields of profession. The Chief Guest on the occasion was Mr. Gopalkrishna Gandhi, Chairman, Dandi Memorial Committee.

The Professor S. C. Bhattacharya Award for Excellence in Research in Pure Sciences, 2010 was conferred on Prof. Goutam Kumar Lahiri, Department of Chemistry, in recognition of his outstanding research contributions in the area of experimental and theoretical manifestation of valence and spin interactions in metal complexes, and the Professor H. H. Mathur Award for Excellence in Research in Applied Sciences, 2010 was presented to Prof. Krithi Ramamritham, Department of Computer Science and Engineering, in recognition of his outstanding research contributions in the area of distributed real-time and data intensive systems.

The Distinguished Alumnus Award, 2011 was bestowed on four alumni, namely, Mr. Girish Sohani (B.Tech, Mechanical Engineering), President and Managing Trustee, BAIF Research Development Foundation, in recognition of his outstanding contributions to rural and community development; Dr. Jayant Sathye (B.Tech, Mechanical Engineering), Senior Scientist, Lawrence Berkeley Nations Laboratory, USA, in recognition of his outstanding contributions to research in the areas of climate change and renewable energy; Dr. Pratim Biswas (B.Tech, Mechanical Engineering), Department Chair and Professor, Department of Energy, Environmental and Chemical Engineering, Washington University, USA, in recognition of his outstanding contributions to research in the field of aerosol science and engineering; and Dr. Roop Jyoti (B.Tech, Chemical Engineering), Vice-Chairman, Jyoti Group of Business, Nepal, in recognition of his outstanding achievements as entrepreneur and contributions to public service.

The Young Alum Achiever Award , 2011 – a newly instituted award to recognise alumni who have achieved extraordinary success and accomplishments in their respective fields of profession at a very young age – was presented to five young achievers in the field of design, innovation, finance and academic research. They are: Mr. Udaya Kumar (M.Des, Industrial Design Centre), Assistant Professor, IIT Guwahati, for his outstanding contributions to research on the subject of typography; Mr. Pranav Mistry (M.Des, Industrial Design Centre), Research Assistant and Ph.D. Student at MIT Media Lab., USA, for his outstanding contributions to the field of artificial intelligence;

Dr. Surya K. Mallapragada (M.Tech, Chemical Engineering), Department Chair and Stanley Chair in Interdisciplinary Engineering, Iowa State University, USA, for her outstanding contributions to research in the field of interdisciplinary engineering; Dr. Subhash Kot (B.Tech, Computer Science and Engineering), Associate Professor, Computer Science Department, Courant Institute of Mathematical Sciences, New York University, USA, for his outstanding contributions to research in the area of computational complexity; and Dr. Viral Acharya (B.Tech, Computer Science and Engineering), Professor of Finance, New York University, USA, for his outstanding contributions to research in the field of banking and finance.

The Lifetime Achievement Award, 2011 was conferred on Prof. Dipan Kumar Ghosh in commendation of his outstanding contributions as a teacher, researcher and administrator.

In his introductory remarks, Prof. Devang Khakhar, Director, IIT Bombay, gave a brief account of the progress of the institute over the years. He stated that the institute continues to be rated as one of the top technical universities in the world. The research and academic programmes are driven by an outstanding faculty, with many of them internationally reputed for their research contributions. The institute

continues to work closely with the alumni for enhancing its activities through interactions in academic and research programmes as well as mobilising financial support. Prof. Khakhar mentioned about an offer the institute recently received from the U.S. to set up satellite campuses in that country. Preliminary discussions have already started on this proposal. He stated that IIT Bombay has become the most preferred destination for the undergraduate studies. Among the 15 IITs in the country, in JEE 2010, 67 of the top 100 rankers and 16 of the top 20 All-India JEE rank holders chose to join IIT Bombay.

In his address, the Chief Guest stated that the Foundation Day of an IIT is the most appropriate occasion to "trigger thoughts about technology and its applications in a foundational sense." He said, "…technologies are ideas that have been given a structure and a form to create further structures and forms. It follows therefore that technology evolves not merely in terms of its assembled sophistication, but also in terms of an ethos. There is an ethos to technology as much as there is a design to it, and a utility to that design." He suggested, "Technology must therefore examine its ethos for an inner monitor that gives it more than a vocabulary, which it has; that gives it a voice, which it seems so badly to lack." ∎

Prof. S. Gogate (Former Faculty, Aerospace Engineering Department) 28th August, 1951 to 3rd April, 2011

Shashikant Digamber Gogate or SDG as we used to call him in the department, was a dear friend first and an associate later. He was among the very few people in the institute with whom I could discuss our common passion, viz., Aircraft Conceptual Design. He was a very hands-on person; his Master's thesis in IIT Bombay was on design and fabrication of a homebuilt aircraft. Throughout his life, Shashikant pursued his passion and did not get deterred even one bit under the several adverse situations that he had to face in his life.

As a teacher, his constant refrain was that students should get a flavour of practical side of Aerospace engineering and design, and he tailored all assignments in his courses with this in mind. We have taught several courses together and in all my interactions with him, I have always admired his grip on the subject and depth of knowledge.

SDG also had a creative side. He had prepared thermocole glider models for teaching the principles of flight. For several years, he impressed us with his lecture-cum-demonstration on this topic, which was a regular feature at the Aviation Day programme organised by the Aeronautical Society of India.

During his nearly two-decade long career as a member of faculty in our institute, SDG wore many hats. He was in charge of the NCC battalion on our campus, and even had an honourary rank in the Army. He used to quip that he was very "useful" for campus residents, since he was a Gazetted Officer who could verify their

testimonials; in fact this is how I too first came across him when I joined the institute. I also know several students who have been counselled by him when they were facing academic and personal difficulties.

SDG was well-known in the Aerospace community of India as the "hovercraft guy", since he built the prototype of a two-seater hovercraft using the engine of a Yezdi motorcycle. During the last few years, SDG was totally committed to his dream project of making a low-cost safe two-seater car for the masses of India. It pains me a lot that he is gone when he was so close to reaching his lifetime's ambition, since he had secured investors for his project and it was soon to be a reality.

He is survived by his wife Shailaja and their daughter Namrata, and may God give them the courage and strength to face the situation. ∎

PROF. R. S. PANT Aerospace Engineering Department

Param: IITB student team develops human-powered vehicle

A team of seven students from the Mechanical Engineering Department, IITB have created a three-wheeler that runs solely on human power. The power is generated by the driver pedalling in a reclining position, resulting in more force being applied on the pedals. Named Param, it runs at a maximum speed of 50 km per hour and looks similar to a car. The team behind Param have confirmed their participation at an international competition for human-powered vehicles organised by the American Society of Mechanical Engineers. The competition, called 'Human Powered Vehicle Challenge' is being hosted by the Montana State University from 13th to 15th May, 2011.

Rohit Singwal, a third year Mechanical Engineering student and a part of the team spoke about the vehicle. "We have designed a tricycle with an aerodynamic shell to cover it. The shell is crucial as it will reduce the resistance one feels when someone travels against air and will increase the vehicle's speed. The final product will look similar to a car with human muscle power or pedalling as the only source of energy."

He adds, "The aim was to design a vehicle which is engineered for everyday use, from commuting to a nearby workplace or commuting within a big campus or for carrying goods from the market, among others." In addition to the basic design, the single-seater vehicle will also have accessories such as a windscreen, headlights and reflectors.

Building the prototype and the final design was difficult owing to lack of resources, said the team. Materials were often not available in the country and had to be imported from the US. While the prototype is ready, the final design has been sent for manufacturing and will be ready this week. This project is funded by ONGC and GAIL (India) Ltd.

Speaking about Param's participation in human-powered vehicle competition, the team's mentor Prof. C. Amarnath, Mechanical Engineering Department remarked, "The human-powered vehicle competition has been taking place for several years and it's for the first time that our students are participating in it. The western world has access to better material, infrastructure and standards of manufacturing. Despite these limitations, our students have met international standards and have done a good job. The best speed achieved at such a competition has been 90–95 Kmph. So, coming first in the contest is not our criterion at the moment. By and large, our team should perform well there."

While designing the vehicle, the team took into consideration four main factors: practicality, reliability, speed and endurance. "It is a sustainable and practical transportation alternative for covering short distances. The health benefits are an added advantage," said Singwal. The team has been working on the project since last July, their main aim then being to extract maximum human power. "The maximum speed that such a human-powered vehicle has achieved is 132 kmph. Since this is the first time we have attempted to build such a car, we limited our speed to 50 kmph," said Ayush Chandak, another third year Mechanical Engineering student.

"We have been encouraging and supporting student-driven projects. Our student-satellite programme is going strong. Our students have been doing well at competitions abroad, like MIT's Genetically Engineered Machines competition. This time, too, they will do very well. Such initiatives enable them to do hands-on work and translate what they've learned in class into a real project," said Devang Khakhar, Director, IITB.

It was unveiled for the campus audience on 26th April, 2011 at the P. C. Saxena Auditorium. ∎

'Poor-ani Jeans aur T-shirt': Clothes Donation Drive

To those who are new to the institute, and to those residents who were probably unaware, an old clothes donation drive called 'Poor-ani Jeans aur T-shirt', was conducted last April in IITB by a group of volunteer students. In the span of four to five days, the volunteers managed to collect more than 3,000 clothes, far exceeding their expectations.

A majority of the clothes have been donated to Goonj (see http://www.goonj.org/), a large organisation that channelises the clothes to the needy across India. About 160 articles of clothing were donated to Shraddha Rehabilitation Foundation while the rest were donated to the Good Samaritan Mission at Vikhroli, and a couple of ashrams at Vasai. Scans of receipts and photos of the campaign are available at *http://www.speakupindia.in/category/poorani-jeans/*

'Poor-ani Jeans aur T-shirt' will be back again this year, and urges residents and students to donate as vigorously as ever! This time around, they plan to scale up to city-level, and will be carrying out a ten-day long campaign around Mumbai, tentatively on the second week of May, 2011. The campaign will involve different clothes donation checkpoints throughout the city each day. Also, a system is being put into place, whereby all clothes will go to NGOs through the volunteers involved, so that they are aware of the beneficiaries. In this regard, the volunteers of 'Poor-ani Jeans aur T-shirt' urge students, especially the first years to be a part of their initiative and help them realise their dream. ∎

Common Gray Mongoose or the Indian Gray Mongoose is a carnivorous animal which has a close resemblance with cats. The rivalry between the mongoose and the snake is famous. Because of this, humans prefer to domesticate them and keep them as pets as a means of protection from deadly snakes.

Though there are quite a few on the campus, the residents have still not taken to domesticating them. Found near lakeside, this agile creature was spotted trotting on the narrow pathway leading to the infamous boathouse. It walked past the photographer, then stopped, looked behind and almost posed for this photo. ∎

Photograph by Mr. C. P. Joglekar, Coodinator (PT&D)

Alumni Day 2010

IIT Bombay celebrated its Alumni Day 2010 on 26th December, 2010. It was a great occasion for old students to reminisce, to network, to get updated, to get rejuvenated and to reconnect with their alma mater. This year's Alumni Day is unique in that a lot many new initiatives were launched this year.

The highlight of the Alumni Day was the Silver Reunion of the 1985 batch who came together in large numbers and ceremoniously handed over a cheque to the institute Director, Prof. Devang Khakhar as part of their Legacy Project on Promoting Technology and Sustainable Development (T&SD) through academics and entrepreneurship at IIT Bombay. This batch has set an unprecedented goal of raising approximately Rs. 4.5 crores for their alma mater out of which a sum of Rs. 2.0 crores has already been committed.

The Hostel Alumni Team Stewardship Programme (HATS), which is currently confined to only two hostels, will now be expanded and launched in ten hostels. HATS now proposes to reconnect the alumni to their old hostels in order to contribute directly not just to their betterment in terms of infrastructure but to assist old mess workers. To facilitate this, hostel level reunions will be organised in all hostels on every Alumni Day. Another initiative launched by HATS is called "Make Hostel my Home", for the purpose of encouraging and empowering students to improve their living conditions and facilities. The elected Student Body will conduct periodic audits of hostel facilities. A rotating trophy has been instituted which would be awarded to the best hostel in terms of cleanliness, hygiene and facilities. Student Achievement in Research and Scholarship (STARS) is yet another unique programme launched by HATS. STARS is designed to support high achieving students for the next level in their educational continuum by providing support for their research projects while in IIT.

The Alumni Day was also an occasion to announce and present the prestigious Distinguished Service Award (DSA), to the alumni who have contributed in a notable and sustained manner to the progress of the institute. This year's award went to Mr. Hemant Patel (B.Tech, Chemical Engineering, 1979) and Prof. Pratim Biswas (B.Tech, Mechanical Engineering, 1980). ∎

IIT Bombay and Applied Materials, Inc. launch state-of-the-art laboratory to develop new materials for Advanced Solar Cells and Electronics Devices

Event commemorates Five Years of IIT Bombay, Applied Materials Inc. collaboration and the inauguration of the 'Chemistry Laboratory for Energy and Nano-electronics'

Applied Materials, Inc. (NASDAQ: AMAT), the world's leading supplier of manufacturing solutions for the semiconductors, display and solar industries and IIT Bombay recently announced the inauguration of a state-of-the-art Applied Materials Chemistry Laboratory for Energy and Nano-electronics (CLEAN) in the institute. This new laboratory expands the scope of collaboration between IITB and Applied Materials to include the development of new materials that can potentially be used in a variety of electronic and applications focused on renewable energy, including the fabrication of next-generation solar cells.

"This is a great example of the kind of university and corporate collaboration that is helping to advance technology by enabling world-class research, innovation and workforce development," said Mike Splinter, CEO, Applied Materials, Inc. "Our goal is to serve as a catalyst for developing the critical technology needed to solve the many challenges of next-generation electronic and solar device manufacturing."

"Applied Materials has grown to become IITB's most important industry collaborator, in terms of the scale of research collaboration," said Prof. Devang Khakhar, Director, IITB. "We welcome the establishment of the Applied Materials laboratory through their generous support. This will begin a new phase of the collaboration in areas related to renewable energy, which are a focus of IITB's research", he added.

The event also celebrates a successful five-year relationship between IITB and Applied Materials on nano-electronics and solar photovoltaic technology research. During the course of this special alliance, Applied Materials has endowed IITB with over $12 million for the following projects:

- The establishment of the Applied Materials Nano-manufacturing Laboratory, India's first 200 mm semiconductor fabrication facility and one of the few university-based 200 mm facilities worldwide
- Collaborative research on nano-electronics and solar PV technology
- Applied Materials Inc.'s donation of three state-of-the-art physical vapour deposition and chemical vapour deposition process chambers to the National Centre for Photovoltaic Research and Education (NCPRE) for depositing thin films for solar cell applications.
- A solar PV and LED lighting system that lights up the main avenue at IITB's campus

- The establishment of the Applied Materials Chemistry Laboratory for Energy and Nano-electronics

IITB is known for having the strongest microelectronics group in the country and will further enhance its capabilities in areas of renewable energy focused research with the launch of the CLEAN lab. This lab will enable IITB to become one of the few academic research centres in India to have such advanced technological capabilities.

"The Indian government is enabling the creation of an ecosystem that will promote research in photovoltaic and nano-electronics to drive expertise and competence in these fields," said Dr. Omkaram Nalamasu. "We see a very strong synergy between our objectives and those of the Government of India. We are committed to working with universities and institutions such as IITB to develop innovations that will improve people's lives."

Applied Materials Inc. began its association with IITB through several research scholar exchange programmes. This association led to the company recognising the rich faculty and student research talent available here and in building a very good synergy and relationship. The inauguration of the CLEAN lab marks another milestone in Applied Materials' longstanding relationship with IITB. ∎

Prof. T. S. Raghunathan (Retd. Faculty, Chemical Engineering Department)
From: 25th July, 1943
To: 31st March, 2011

Anybody who knew T. S. Raghunathan for any length of time would not have failed to notice his passion for teaching. Reaction engineering (especially polymer reaction engineering) and thermodynamics were clearly his favourites, but he was always enthusiastically prepared to teach other subjects as well, and had definite views on how they should be taught. He was a classicist in his approach to teaching; from the manner he decided the content to the way he delivered it. He read widely, and his choice of books – it had to be Aris for Reaction engineering, and Denbigh for Thermodynamics - showed that he was a discerning reader. I have known him to spend hours in the library (the late eighties or early nineties were still pre-google days) trying to get a number right for a system of industrial interest so that he could set an interesting problem. He was a man of strong opinions – particularly when it came to teaching – and did not shy away from expressing them.

While he took Aris' point about the utility in pedagogy, of systems such as aA+bB, his own preference was definitely for introducing real systems. He had thus collected a lot of data on systems of industrial interest, and this combined with his phenomenal memory, no doubt stood him in good stead when it came to advising industry. Another point comes to mind in connection with his memory. He practiced 'three-dimensional filing' and his desk was an organiser's nightmare, but amazed me by always being able to quickly find a piece of information he needed.

TSR's outspokenness did earn him a few detractors, but I have a feeling even they recognised the innate worth of the man and rallied round to support him when the need arose. He was thus able to form an inter-departmental, inter-institutional team to successfully handle the Continuing Education Programme (CEP) he ran for Reliance Industries for several years. He certainly has a huge fan following among the alumni.

He himself always had a special place in his heart for his students, and would recount, time and again, stories about past students.

While we did not do much research together, we did guide a student or two jointly – I don't remember whether he was officially involved or simply offered his advice generously as he was wont to do – and he brought the same analytical approach to his research.

Friendly to the point of often being intrusive, TSR was quick to seek out the problems of his friends and would go out of his way to help them. And in this, it certainly did not come in the way that he and you had had violent disagreements just recently. He had become somewhat of an occasional visitor after his retirement, having moved some distance away from the campus, but made it a point to visit his friends and exchange notes when some reason brought him to the campus. I am sure his friends in the academic community will sorely miss him. ∎

PROF. A.K. SURESH Chemical Engineering Department

IITB-Monash Annual Symposium

IITB-Monash Research Academy hosted its annual symposium during February 17-19, 2011. The theme of the symposium was "Challenges in a Resource-Constrained World". On this occasion, the key researchers from both IIT Bombay and Monash University, the two premier institutions of higher learning, came together to share, review and form views on the intensity of the IITB-Monash collaboration, the progress of the Academy, the new areas, challenges and research themes to focus on and on the exciting challenges that are common to both India and Australia in today's resource-constrained world.

The IITB-Monash Academy depends vitally on three principle stakeholder communities – students, supervisors and external partners. This symposium engaged all the three stakeholder communities in a compelling manner. Supervisors, external partners and students engaged themselves to develop new ideas for collaboration, expand on existing ideas and build new partnerships. The symposium also focused on developing common research programmes of interest to society, the government and industry. The event provided a platform to air opinions and views and to listen to the industry on needs, goals and challenges.

On this occasion, IITB's director Prof. Devang Khakhar said, "The IITB-Monash Research Academy is already engaging strongly with industry in Australia and India and we expect this to increase in the coming years. As a result, it will intensify the innovation ecosystem that IITB exists in, whereby industry-driven innovation is carried through cross-disciplinary teams that include talented students along with industry." Prof. Ed Byrne, Chancellor and President, Monash University, was very happy about the collaborative efforts, and he expressed this as follows: "IIT Bombay and Monash University have together worked hard to develop a vibrant research joint-venture that will focus on grand challenge research in six key themes that are of critical importance to both India and Australia. With 60 PhD students in the programme and a growing list of publications, I look forward to the Research Academy creating significant scientific impact in both India and Australia."

The 3-day symposium featured many eminent personalities such as as Mr. F.C. Kolhli, former Deputy Chairman, TCS; Mr. Aravind Sitaraman, Managing Director, CISCO; and Mr. Manish Gupta, Associate Director, IBM Research Laboratory.

The symposium concluded with the Student Annual Awards ceremony. Dr. Narayana Murthy, Chairman and Founder of Infosys and Chair of the Academy's Advisory Board was the Guest of Honour on the occasion.

Bose Memorial Lecture & 'Think Policy' Conference

The Fourth Brigadier S.K. Bose Memorial Lecture and the Seventh 'Think Policy' Conference were presented by IITB in partnership with US India Forum and Indian Public Policy Form at the Victor Menezes Convention Centre on 28th January, 2011.

At the 'Think Policy' Conference, Dr. Uday Bhawalkar spoke on 'Ecology Clean-up Using Bio-Sanbitizer Ecochips' and Mr. Alok Sharma, Head, Corporate Sustainability, Larsen & Toubro, spoke on 'Green... Good & Growing: What Makes L&T Different'.

Mr. Rajendra Shende, Director in the office of United Nations Environment Programme, Paris, delivered the Brigadier S.K. Bose Memorial Lecture on the topic: 'Low Carbon Economy'.

Energy Day 2011

The Department of Energy Science and Engineering organised a panel discussion on 'Green Jobs and Energy Education' on the occasion of Energy Day, 2011 on 19th March at the Victor Menezes Convention Centre. The panellists were:
- Prof. S. Parasuraman, TISS, Mumbai
- Mr. Datta Kuvalekar, GM-R&D, Forbes Marshall, Pune
- Dr. Uday Lajmi, Dean, Management Education (Training & Development), Reliance Energy

Fighting Back: IITB Alumnus sheds new light on Godhra Riots Investigation

IITB Alumnus (1985) and IPS officer Sanjiv Rajendra Bhatt filed an affidavit this month to the Supreme Court stating that the Special Investigation Team (SIT) was ignoring the proofs that he had supplied of the Gujarat government's involvement in the Godhra riots in 2002. The evidence he has submitted includes floppy disks, cellphone records and other documents.

Bhatt, a graduate in Applied Geology describes a meeting he had with the SIT on 27th February, 2002 where the Gujarat Chief Minister, Narendra Modi stated that Hindus must be allowed to vent their anger. Bhatt said that he also provided "verifiable details" about a deeper conspiracy aimed at subverting the judicial investigation. In return, Bhatt states that SIT has reacted with "unconcealed hostility" to his efforts.

The SC put into place the SIT in March, 2008 to investigate the mass-murders initiated during the riots. One of these massacres was the death of 69 people at Gulberg Society in Ahmedabad on 28th February, 2002. The victims included a former MP, Ehsan Jafri. Following a special petition filed by his wife, Zakia Jafri the SC ordered a special probe into the murders – this is the case to which Bhatt refers to in his affidavit.

Bhatt drafted his own affidavit, uncertain about trusting anybody. It further states, "I have time and again tried to bring these facts to the notice of the SIT but they seem disinclined to follow up these important leads." He also accuses the SIT of having "chosen to intimidate certain witnesses" who testified to his presence at the meeting with Modi.

"Given the conditions that have existed in Gujarat for almost the last decade, it would be very unrealistic to expect any government servant to depose freely and fearlessly before any forum, including the SIT, unless he or she is provided adequate protection and complete immunity from persecution from a highly vindictive administrative setup," says Bhatt's affidavit.

When asked why Bhatt waited nine years before blowing the whistle, he answers that as an intelligence officer, he was bound by confidentiality. Bhatt was summoned by the SIT for the first time in November 2009. With his career at stake, he stated that he would reveal his information only if the team registered a criminal case, and not simply for an inquiry.

Keeping it Light – IITB Alumnus starts Stand-Up Comedy Company

Declining the plentiful job offers available to every IIT graduate, Nitin Gupta, an IITB alumnus started his own stand-up comedy company called Entertainment Engineers in October, 2009. Two years later there is a team of ten running the successful company, known to be a favourite at college and corporate events.

To give our readers a taste of the humour that our institute may have unwittingly nurtured, god is a geek whose experiments create vegetarian lions and compassionate crocodiles, till he falls in love with an atheistic woman.

Nitin Gupta, a graduate in Chemical Engineering started Entertainment Engineers with two of his IITB friends. Speaking about the company, Gupta says, "The aim is to make stand-up comedy a respectable profession in India and, of course, profitable."

Starting as a comedy professional took some time to take off for some. "I actually took up a day-job in the IT sector for three months but left it because I realised that stand-up comedy deserved my 100 percent," said Tushar Upadhyay, a B. Tech in Material Science and now a stand-up comedian for Entertainment Engineers.

Their story has now become an inspiration for several students in the institute who want to break away from the norm and be a part of something similar. "I was always interested in drama and comedy, but only after I joined the company did I realise that this is what I want to be," said Prashant Chandra, 19, a first year Mechanical Engineering student, who looks after the company's business development. In the near future, he hopes to become a comedy professional as well.

IITB Alumnus Develops Breakthrough Fog Harvesting Technology

IITB alumnus Shreerang Chhatre has created a technology that can absorb water from fog. Inspired by a desert beetle, he hopes the device will help the millions of poor people living in arid conditions, with very poor access to pure water.

On the west coast of Africa in the Namib desert, a species of beetle called the Stenocara gracilipes has found a distinctive way of surviving. The Namib Beetle, as it is also known collects water droplets from the morning fog on its back and lets the moisture roll down into its mouth, thereby being able to drink water an otherwise parched environment.

A graduate of Material Science and Engineering from the institute, Chhatre is an aspiring entrepreneur at Massachusetts Institute of Technology, presently working on fog harvesting. Chhatre's fog-harvesting device consists of a fence-like mesh panel which attracts droplets, which then drip into containers connected to the panel. Using this unique device, villagers can collect water near their homes, instead of having to trek vast kilometres in search of water.

Speaking of the device's aims, Chhatre says, "The beetle only needs to drink a few micro-litres of water. We want to capture as large a quantity as possible." In some field tests, fog harvesters have captured one litre of water per one square metre of mesh, per day. Currently, Chhatre and his team are conducting extensive tests to enhance the capacity of the meshes to collect water. The beetle's biological build has been an inspiration but the team has had to work on a different format to create the fog harvesting device so that it can work efficiently for a human environment.

The award-winning *Tanko Bole Chhe* (The Stitches Speak) film by **Prof. Nina Sabnani** of IDC has won two more awards. It was named the best short documentary at CINEQUEST Film Festival, San Hose, USA. At the 30th annual Black Maria Film & Video Festival hosted by Cornell Cinema, it took home the Stellar Selections Animation award.

The 12-minute film celebrates the art and passion of Kutch artisans associated with Kala Raksha. The film traces multiple journeys made by the participants towards defining their identities and forming the Kala Raksha Trust and the School for Design. The film uses their narrative art of appliqué and embroidery through which they articulate their responses to life, including events as traumatic as the earthquake and as joyful as flying a kite. Through conversations and memories, four voices share their involvement in the evolution of a craft tradition.

The other awards that The Stitches… has received are:
- Best Short Film at the Bollywood and Beyond, 2010 Film Festival at Stuttgart, Germany
- FICCI Frames 2010, India: Best Short Professional
- FICCI Frames 2010, India: Best Short Social Welfare
- ISFFI (International Short Film Festival, India) 2010: Best Creative film
- IDPA (Indian Documentary Producers' Association) 2010: Excellence Award, 2010

IDC Student wins Chevrolet Design Contest

John Paul Xavier, a student at IDC has won the automobile design competition called 'Design the Next Chevrolet' hosted by Autocar India, in association with General Motors, India. The contest is targeted at attracting talented Indian designers and engineers from across the country and also showcasing their work to Indian automobile manufacturers.

John Paul graduated with a B. Tech in Electronics and Communication from Model Engineering College, specialising in robotics. He worked as a roboticist for a year before joining IDC for a Masters in Product Design. It is this combination of his work and educational experience that gave him an edge in the competition. Speaking of education, Xavier strongly felt that the design industry ought to initiate more programmes and design schools so that aspiring designers are able to get a perspective of the requirements of the industry while learning automotive design.

John recounts how the leopard sighting at IITB inspired the crisp curves and the swift, lean postures in his design. Elaborating on his inspiration, Xavier said, "My way of design is usually form following function.

It is more of 'emotion in motion' at the start of the design process and 'engineering for motion' towards the end. I draw a lot of inspiration from nature, robotics and aerospace domains."

Speaking on automotive design in India, he said, "Automotive design is a budding field in our country with institutes like ours starting to offer specialised courses in Mobility and vehicle design. The scope is going to be positive with a lot of Indian and foreign automobile manufacturers setting up their design studios in India." Not to forget, he says, "It's a tough field. We have to compete with designers from Italy, Europe, USA and South East Asian countries where design is given a lot of weightage. But we have a bright future ahead of us", he adds.

Due to India's economy becoming flexible and open over the years, the automobile industry has grown enormously. This has also affected automobile design, which has now evolved from its past concerns of giving priority to technology, to becoming a crucial aspect of automobile manufacture keeping many criteria in mind. Sumit Sawhney, Marketing & After Sales, General Motors, India adds, "I see manufacturers bringing their design studios to India in the coming years. India is going to rank in the top three major automotive markets in the world by 2020." Anil Saini, Director (Design), General Motors, India added, "We are interested in designing cars for India, and it will be an added pleasure when the talent comes from our own land and culture."

PROF. D. CHANDRASEKHARAM, Department of Earth Sciences, has been appointed as an Independent Director on the Board of O.N.G.C. and also on the Board of Western Coalfields Ltd., Ministry of Coal for a period of three years.

PROF. S. M. KHOPKAR, Professor Emeritus, Department of Chemistry, has been bestowed the Life Time Achievement Award by the Indian Chemical Society, Kolkata at the 47th Annual Convention of Chemists at Raipur, Chhattisgarh on 23rd December, 2010.

PROF. G. K. LAHIRI, Department of Chemistry, has been awarded Ramanna Fellowship for the second time by the Department of Science and Technology.

PROF. A. K. SINGH, Department of Chemistry, has been elected on the Council of the National Academy of Sciences India for a period of two years.

A recent publication by **Prof. D. S. Misra**'s group, Department of Physics has been highlighted in Nature, India in an article titled 'Graphene Nanomesh'. The original paper was published in Nanotechnology (Vol. 22, Page 025704).

PROF. K. P. MADHAVAN, Professor Emeritus, Department of Chemical Engineering, has been awarded CHEMTECH CEW Leadership and Excellence Award.

PROF. S. KOTHA, Department of Chemistry, has been selected for the prestigious Prof. Y. T. Thathachari Research Award for Science, 2010.

PROF. A. KUMAR, Department of Biosciences & Bioengineering, has been selected for the prestigious Ramalingaswami Fellowship of the Department of Biotechnology, Government of India.

PROF. J. ADINARAYANA, CSRE, has been elected as Vice President (2010–12) of the Asian Federation for Information Technology in Agriculture (AFITA).

SHRI D. B. ADAGLE, Assistant Registrar, Internal Audit Section, has been bestowed the Lokmanya Tilak Samaj Bhusan Award, 2010.

SHRI SUBHASH N. GHOLE, Assistant Security Officer, Security Section, has received the President Award for his 30 years of meritorious service in the Home Guard Department, Maharashtra State.

THAIGU RANGANATHAN, PhD. Student, SJM School of Management, has been awarded a grant from ILO for a research project on Micro Insurance.

BALI S. CHANDRAKANT, Research Scholar, Department of Metallurgical Engineering and Materials Science (working with Prof. V. S. Raja), received the second prize in the Best Poster category at the international conference on Advanced Nuclear Materials, 2011, held at Bhabha Atomic Research Centre, Mumbai, during 9–11th February, 2011, for the paper entitled 'Effect of Nitrogen Addition on Low Temperature Sensitization and IGSCC Behaviour of Austenitic Stainless Steels in Simulated BWR Environment'. (Co-authors: Profs. S. C. Bali, Y. Takeda, V. Kain, V. S. Raja and T. Shoji).

PROF. WOLFGANG-MARTIN BOERNER, Professor Emeritus, University of Illinois at Chicago, USA, spoke on 'Recent Advances in Fully Polarimetric Air/Space-Borne SAR Sensor Design Culminating in TanDEM-X, and its Applications' on 20th December, 2010.

DR. RICHARD (RICK) F. RASHID, Senior Vice President of Research, Microsoft Research, USA, spoke on 'The Role of Basic Research in Technology' on 20th January, 2011.

PROF. JAYANT V. NARLIKAR, Emeritus Professor, Inter-University Centre for Astronomy and Astrophysics, Pune, spoke on 'A Critique of Standard Cosmology' on 21st January, 2011.

PROF. ADA E. YONATH, Nobel Prize Winner in Chemistry, 2009, from the Department of Structural Biology, Weizmann Institute, Rehovot, Israel, spoke on 'The Amazing Ribosome, its Tiny Enemies and Hints about its Origin' on 3rd February, 2011.

VICE ADMIRAL JOHN J. GROSSENBACHER (Retd.), Director, Idaho National Laboratory, Idaho, USA, spoke on 'Structure of Nuclear Energy R&D in the USA' on 9th February, 2011.

PROF. GAUTAM R. DESIRAJU, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore, spoke on 'Science and Engineering Education and Research in India' on 11th February, 2011.

DR. ANDREW KERR, Director, Edinburgh Centre on Climate Change, University of Edinburgh, spoke on 'Bridging the Intimidating Gap between Good Ideas and the Practical Actions required for Delivering a Low Carbon Economy' on 15th February, 2011.

PROF. RONNIE BELMANS, Katholieke Universiteit Leuven, Belgium, spoke on 'The European Smartgrids Scene' on 15th February, 2011.

DR. NITISH V. THAKOR, Professor of Biomedical Engineering, Electrical and Computer Engineering and Neurology, Johns Hopkins University, USA, spoke on 'Building the Brain Machine Interface - Engineer's Journey into Brain and Mind' on 2nd March, 2011.

MS ROHINI NILEKANI, Chairperson of Arghyam, Bangalore, spoke on 'Social Challenges, Personal Responses' on 4th March, 2011

IITB-Nomura Lecture Series

Nomura has planned a lecture series in partnership with IITB to promote education and research in the field of engineering, technology, sciences, arts and finance for advancement of learning and dissemination of knowledge in such fields. The first lecture in this series was delivered on 24th December, 2010, by Shri Montek Singh Ahluwalia, Deputy Chairman, Planning Commission, the Government of India. The topic was 'Challenges before the Indian Economy'.

Public Lecture

Mr. Kapil Sibal, Minister of Human Resource Development, spoke at IITB on 8th January, 2011 on a very topical subject: 'Role of Technology, Knowledge and Innovation in Transforming India'. At the outset, Mr. Sibal talked about the need to confront with the imperatives of the new global situation, and today, for the good of the nation, we acknowledge a greater sense of responsibility and urgency to make science, technology and innovation major driving forces for the economic and social development more conscientiously and resolutely than hereto. The Government of India has declared the second decade of the twenty-first century to be the 'Decade of Innovation'. The National Innovation Council (NIC) has been set up to

prepare a roadmap to promote inclusive development. Mr. Sibal put forward an agenda to realise the 'Vision of India' as an innovation hotspot, as follows:

"First, realise long term academia-industry collaborative relationships with open access to resources and free of intellectual property (IP) entanglements. Second, put in place better integration of corporations with higher educational and research institutions to create a pipeline for skills that will support growth industries. Third, encourage multidisciplinary collaboration among business, government, academia and R&D thereby creating an environment that supports technological development which is aligned with and driven by industry needs. Fourth, recognising the contribution of young researchers to the vitality and quality of the research system. Fifth, enhance significantly publicly funded research that reaches out to the market by engaging corporate executives as champions. Sixth, take up in collaboration with concerned government economic ministries the modernisation and upgradation of technology in use by the small and medium enterprises. Seventh, encourage the formation of International R&D, technology and innovation consortia between Indian and foreign entities. Last, provide tax incentives to businesses that collaborate with academia and R&D researchers."

Russian President at IIT Bombay

President Dmitry Medvedev visited IIT Bombay on 22nd December, 2010, and had an interactive session with the faculty and students of the institute at the Victor Menezes Convention Centre.

IIT Bombay and IITBAA launch Nashik Chapter

Meeting focuses on Entrepreneurship Opportunities for alumni from Nashik and nearby regions

IT Bombay Alumni Association and IIT Bombay held its maiden outreach event and the formal launch of the Nashik chapter of the Association in Nashik on 30th April, 2011. A meeting was held at the Express Inn from 5.30 pm onwards for all local IIT Bombay alumni. It focused on entrepreneurship and IITB alumni.

The inaugural address was made by Prof. Ali Contractor, Dean (Alumni and Corporate Relations) and an IITB alumnus and entrepreneur himself.

Prof. Contractor has his own incubator company and is a member of IIT Bombay's Society for Innovation and Entrepreneurship.

Research indicates that IIT graduates have unique entrepreneurial abilities and the ventures founded and run by them have an at least five to seven times higher chance of success. There is great opportunity in providing mentorship and guidance – along with the required growth funding – to alumni entrepreneurs, enabling them to be future industry leaders. The two keynote speakers at the meeting were both local stalwarts who have achieved distinction in national and global businesses. Nashik-based entrepreneur and IITB alumnus Narendra Goliya, MD, Rishabh Instruments Pvt. Ltd. who spoke on 'Global Opportunities for Indian Businesses' and Satish Parakh, MD, Ashoka Buildcon Ltd. who spoke on 'Business opportunities for IITB alumni with Ashoka Buildcon Group'.

Also speaking at the meeting was Vikram Gupta, CEO, IvyCap Ventures. It is India's first innovation and technology venture capital fund with an approach to focus on entrepreneurs with high-quality educational backgrounds. This fund will be anchored by a large number of alumni from all IITs, and will focus on investing in entrepreneurs with professional degrees from premiere institutions, mainly IITs and other top-league institutions. This fund has a target size of Rs. 300 crores, with a strategy to prioritise investments in the early stages of growth of companies, which are based on innovation and technology-driven businesses in sectors such as Healthcare, Education and Food.

IITB alumni will elect an ad hoc co-ordination committee that will carry the new chapter's activities forward and discuss future areas of activity of the association.

PROF. K. NARAYANAN Department of Humanities and Social Sciences has been appointed as Head, Department of Humanities and Social Sciences, on 18th November, 2010.

PROF. SHIVA PRASAD Department of Physics has been appointed as Dean (Academic Programmes) on 1st December, 2010.

DR. ASHUTHOSH KUMAR has joined as Assistant Professor in the Department of Biosciences and Bioengineering on 3rd January, 2011.

DR. KANTIMAY DAS GUPTA has joined as Assistant Professor in the Department of Physics on 6th January, 2011.

DR. KIRNA KONDABAGIL has joined as Assistant Professor in the Department of Biosciences and Bioengineering on 20th January, 2011

PROF. SACHIN PATWARDHAN Department of Chemical Engineering has been appointed as Head, Department of Chemical Engineering, on 21st January, 2011.

PROF. N. HEMACHANDRA Industrial Engineering and Operations Research (IE & OR), has been appointed as Convener, IE & OR, on 24th January, 2011.

PROF. MILIND SOHONI Department of Computer Science and Engineering has been appointed as Head, CTARA, on 8th February, 2011.

RETIREMENTS

MS VAIDEHI SHRIRAM GALGALE
Draftsman (Gr.I), Estate Office, retired after
29 years of service in the institute

MR. MADHUKAR V. BHAGWAT
Attendant (SG), CSRE, retired after
33 years of service in the institute.

Shri Madhukar Bhagwat was working with the CSRE's 'Geotechnical Group', later renamed as 'Terrain Evaluation and Land-use Division'. Shri Bhagwat regularly accompanied the field teams which were responsible for taking care of the amenities in the camps. He did his work sincerely and honestly. We wish him a happy and healthy post-retirement life.
- **Prof. (Ms) P. Venkatachalam, Head, CSRE**

MR. GAMBHIR J. SOLANKI Cleaner
(SG), IIT Hospital, retired after 35
years of service in the institute.

Shri Hanumante assisted in UG Lab experiments at S2 Bay Laboratory of the Chemical Engineering Department
- *Shri S.V. Deshpande, Technical Superintendent*

Mr. Gambhir Solanki served IIT Hospital for the last 14 years. He came across as a quiet, hard-working and obedient person and performed his duties admirably well in keeping the hospital clean.
- **Dr. Nisha Shah, Chief Medical Officer, IIT Hospital**

MR. NANA M. SOLANKI Cleaner (SG),
Public Health Office, retired after 35
years of service in the institute**.**

Mr. Nana Solanki was a sincere and hardworking person. We wish him a peaceful retired life. -
Mr. A. G. Tambe, Sanitary Assistant

MR. SHANTARAM A. JADHAV Sr.
Helper, Department of Computer
Science and Engineering, retired after
30 years of service in the institute.

Mr. Shantaram Jadhav was known for his calm and friendly disposition. We wish him a peaceful retired life.
- **Prof. Amitabh Sanyal, Head, Computer Science and Engineering Department**

MS SHAKUNTALA DHONDU KADAM
Cleaner, Public Health Office, retired
after 15 years of service in the institute.

Ms Shankutala Kadam was an open-minded, quick-witted person. We wish her a peaceful retired life.
- **Mr. A. G. Tambe, Sanitary Assistant**

31st January, 2011

PROF. ACHYUT NARAYAN TIWARI
Department of Metallurgical
Engineering and Materials
Science, retired after 31 years
of service in the institute.

Prof. Achyut Tiwari joined the institute in the IDP of Materials Science in 1980 as a Lecturer. Subsequently he moved to Metallurgy Department as Assistant Professor in 1983 and has continued there since then. He has been a committed teacher and has always taken a deep interest in the well-being of his students.
- **Prof. R. O. Dusane, Head, Metallurgical Engineering and Materials Science**

MR. CHANDRAKANT P. SHIMPI Sr.
Technical Superintendent, Department
of Earth Sciences retired after 35
years of service in the institute.

Mr. Chandrakant Shimpi joined the Geology Section, Department of Civil Engineering as a JTA and rose to the position of Senior Technical Superintendent.

Mr. Shimpi is popularly known in the campus as the "Yoga Teacher" and has a large number of students who benefited from his teachings.
- **Prof. Kanchan Pande, Department of Earth Sciences**

MR. SUBARAO D. KURNE Watchman (SG), Security Section, retired after 35 years of service in the institute.

MR. SHIVMURAT PRASAD Watchman
(SG), Security Section, retired after
42 years of service in the institute.

28th February, 2011

MR. AVINASH G. KOTIYA Sr. Technical
Superintendent, Department of
Chemistry retired after 39 years
of service in the institute.

MR. SURESH D. MAIN Jr. Technical
Superintendent, Electrical
Maintenance Division, retired after
36 years of service in the institute.

MS RATNA CHANDRA Jr.
Superintendent, Academic
Section, retired after 35 years
of service in the institute.

Ms. Ratna Chandran worked with diligence and without any lapses on her part while performing her duties. She has always been very helpful to students.
- **Shri. H.S. Verma, Ag. Deputy Registrar (Academic)**

MR. R. VELUSWAMY Jr.
Superintendent, Accounts
Section, retired after 37 years
of service in the institute.

Shri R. Velusamy, Junior Superintendent in the Account Section joined the institute in 1974 as a Lower Divisional Clerk. He acquired a BA from Bhopal University in 1981 and an MA from Bombay University in 1988. He did his work with utmost sincerity and showed a high level of commitment in managing the Post Office's Salary Saving Scheme, group insurance, remittance of professional tax recovered from salary and of life insurance premiums to LIC and the Post Office.

However, Mr. Velusamy was more popularly known across the campus for preparing annual Income Tax returns and resolving various Income Tax related problems faced by anyone. He will be greatly missed by the hundreds of staff and faculty members who have relied upon his help for many years.
- **Mr. Indrajit Romani, Asst. Registrar (F&A)**

MR. PRAKASH V. HELODE
Mech. Asstt., Department of
Mathematics, retired after 36
years of service in the institute.

MR. VITHOBA D. JANGLE Sr.
Helper, CRNTS, retired on after 29
years of service in the institute.

MR. GANPAT R. AHEDA Mali
(SG), Estate Office, retired after 36
years of service in the institute.

31st March, 2011

MS ELSAMMA ANTHONY Sr. Staff
Nurse, IIT Hospital, retired after 29
years of service in the institute.

Ms. Elsamma Antony will be remembered fondly as extremely likable, ever-smiling and hardworking person. She had a deep sense of devotion to her duties and was always ready to accept responsibilities given to her. Ms. Antony rendered her duties

as In-charge Nurse before her retirement.
- **Dr. Nisha Shah, Chief Medical Office, IIT Hospital**

MR. EAPEN NINAN Jr. Technical
Superintendent, IIT Hospital, retired
after 32 years of service in the institute.

Mr.Eapen Ninan will be remembered by his colleagues as a guiding personality in work and personal ties. He was a very punctual, sincere and hardworking person.
- **Dr. Nisha Shah, Chief Medical Office, IIT Hospital**

MR. DATTATRAYA V. NIMKAR Jr.
Technical Superintendent, Department
of Aerospace Engineering, retired after
41 years of service in the institute.

Dattatraya Vinayak Nimkar worked in the Propulsion Laboratory where he has been maintaining and operating the rigs for many years. Mr. Nimkar was known for his straightforwardness and no-nonsense approach in interacting with his colleagues as well as faculty members. He will be fondly remembered by his professional and personal community alike.
- **Prof. A. M. Pradeep, Head, Aerospace Engineering**

MR. SHRIKANT M. KHOPKAR Jr.
Technical Superintendent, Department
of Mechanical Engineering, retired after
39 years of service in the institute.

MR. BABU S. BHALEKAR Mech.
Assistant, Electrical Maintenance
Division, retired after 38 years
of service in the institute.

MR. RAMANBHAI B. SOLANKI Library
Attdt. (SG), Central Library, retired after
39 years of service in the institute.

Mr. R. B. Solanki was a sincere and dedicated worker. He would keep the shelving work up-to-date and was known to help library users with great love. He was a friendly and cooperative person. We wish him a happy, peaceful and long retired life.
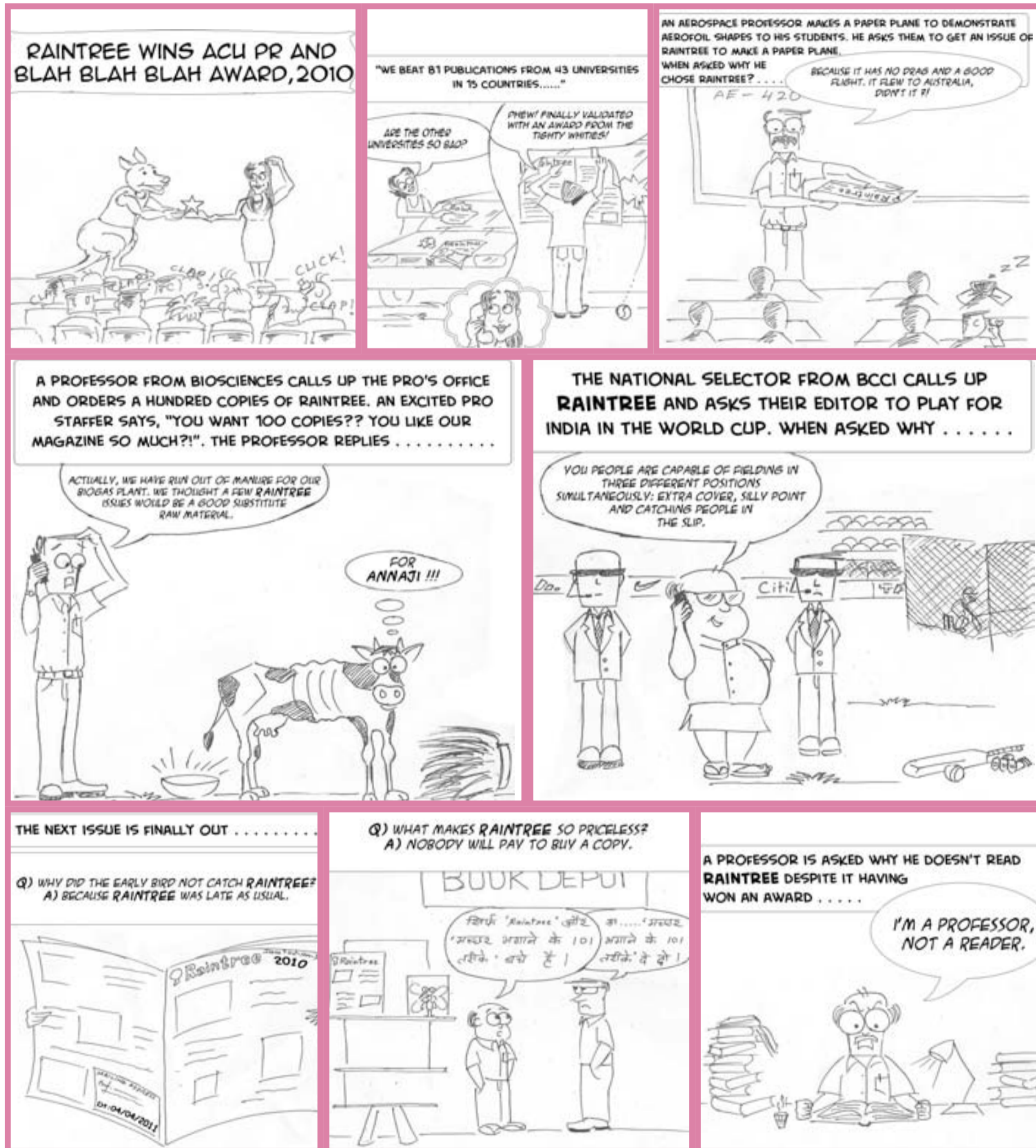- **Manju Naika, Senior Library Information Assistant, Central Library**

Here's to *Raintree*! (part II)

The first part of this comic strip in the last issue was about our thoughts on *Raintree*. In this concluding part, alumnus **Bakul Desai** has mischievously conceptualised and first year under-graduate, **Utkarsh Raut** has evil-mindedly illustrated to give you what they think is the real picture. ■

MAILING ADDRESS