

FUNDA MATICS

2Q2014

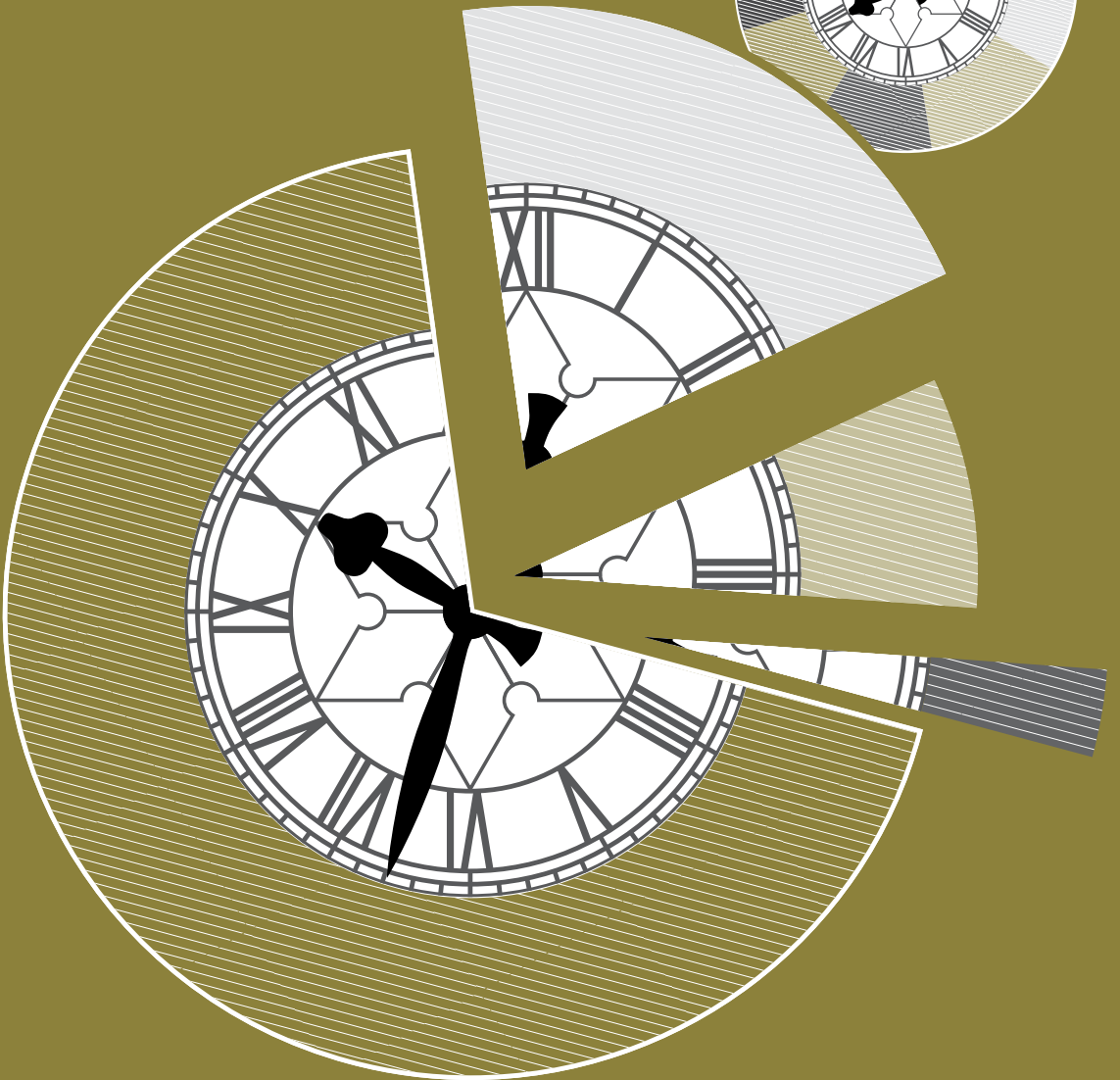
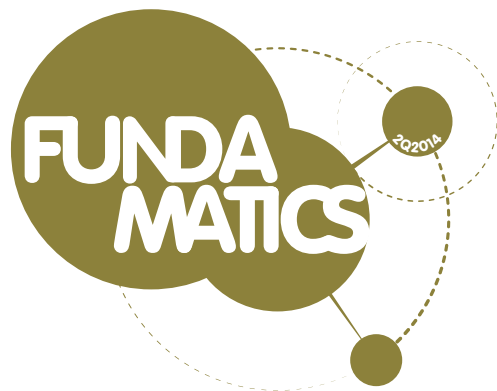




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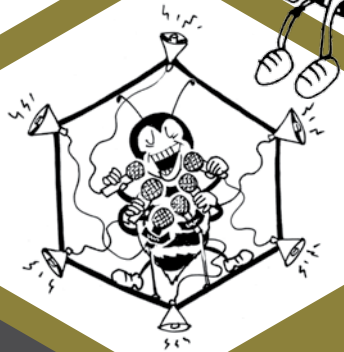


Quarterly magazine of
The IIT Bombay Alumni Association

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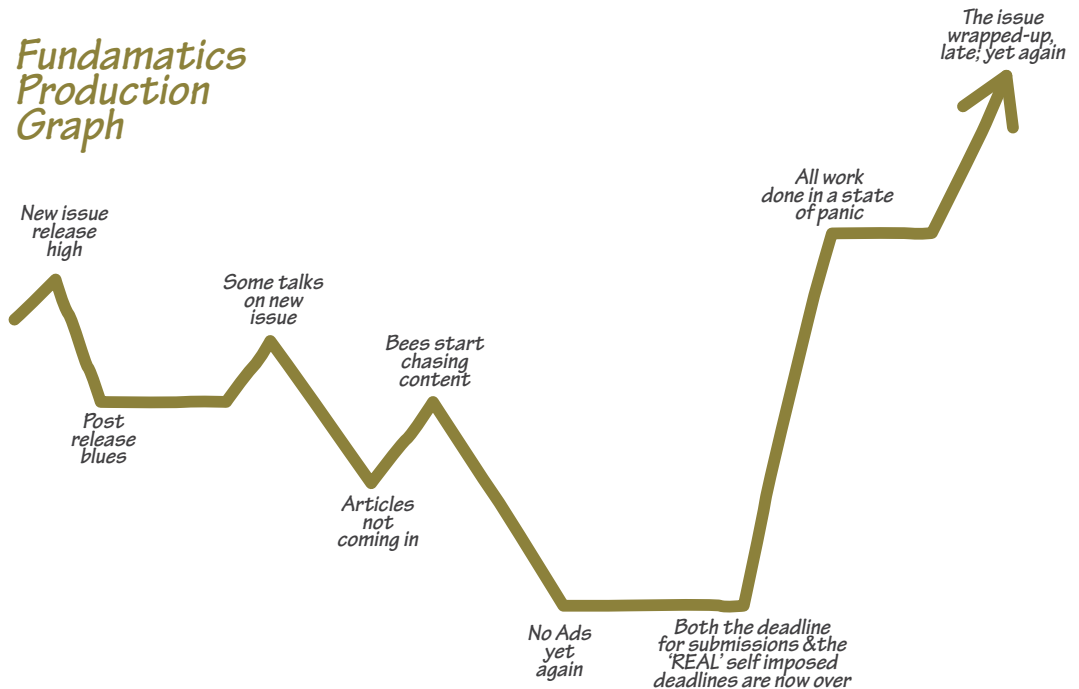
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From the Beehive

Fundamentals Production Graph



Then Spring Became The Summer, Who'd Have Believed You'd Come Along

The spring issue of Fundamentals is going to print in summer, and by the time it reaches your hands it is going to be monsoon.

You can attribute it to magazine production fatigue or the fact that we have a lot in common with the students at IIT Bombay. Students and student life, which is the thematic focus of this, what was supposed to be the Foundation Day issue and the issue production has been reminiscent of the last minute panicked cram session before an exam or a BTP presentation.

Thankfully we are a set of bees that get energized by deadlines, even when we are well

past them. Or better still, we only get energized when we are well past them. And even though this issue of Fundamentals moved as indolently as the summer, the finished product has an excitingly different complexion with a literary, almost artistic bent.

When we invited submissions from students with special announcement, we had no idea that it would turn out this way. This is an issue focused on literary conversation and the student submissions are refreshingly non technical, following their inner muse in stories that are honest, poems that are vulnerable and work that is willing to reveal the flaws and the beauty hidden in each one of us.

The subjects they touch upon - sexual violence, religion, gender, insurgency, television and its role in IITB life, identity politics - or

the more personal issues of self-doubt and self-realization reflect the creative diversity amongst the student community.

Coupled with it are some exceptional writing from our regular columnists Alibaba and Bankim Biswas, while the newest bee in town Tinkerbee makes a stellar entrance with her own poetry. Readers from the early years of IIT Bombay must not miss out on the exhaustively researched and historically rich account of Prof N R Kamath to celebrate the year of his birth centenary. There is also a great feature on young alumni entrepreneurship by Noseybee and some old entrepreneurial wisdom from Ron Mehta and the latest in IIT news available in the section class notes and IITB Ki Taaza khabar.

So here it is then, the summer-monsoon issue of 2014 and like old friends whose conversations can resume even after a long

hiatus, we are counting on the fact that by now Fundamatics has hopefully become a part of your literary furniture. And although our issues often fail to appear when promised or sometimes without the predicted content, the fact that we do try to ensure that each new issue of Fundamatics has a buzz about it will make the wait worthwhile.

We may be late, but the bar was always set high and leaping over it all the more satisfying because of it.

Queenbee

Boundary Walls

ABHINAV GARG

Long, long time ago...
Men sat huddled around a dying fire – its flames flaring up as it gave way to the cold. It had been a long day – catch was limited, and they had worked too hard. One of these men, tired as he was, lay down on the ground, and gazed up. He looked intently at the night sky – the stars, the moon, and the darkness – all the while wondering who he was, and who had made them all. He raised the question to other men, “Do you not wonder who made us all? The forest is so big, and there are so many of us – who is responsible for all this?”

The next few moments were those of silence. Finally, someone spoke, “Must be very strong, whoever he is – for I can set fire to only a leaf when I strike two stones – but he burns entire forests with just one stroke of the skies!” Men introspected, and were filled with awe. They had just started dealing with the concept of God.

It was dawn, but darkness lingered. The skies boomed, and animals paced across distraught – knowing all too well that disaster was on its way. One man said, “Have we made Him angry?” A woman, his mate, asked, “Made whom angry?” “You weren’t there last night, when we discussed how someone very powerful must be behind us all! He’s going to strike the skies again!” said the man. The woman was grief stricken, knowing that only death followed the spark from the skies. She

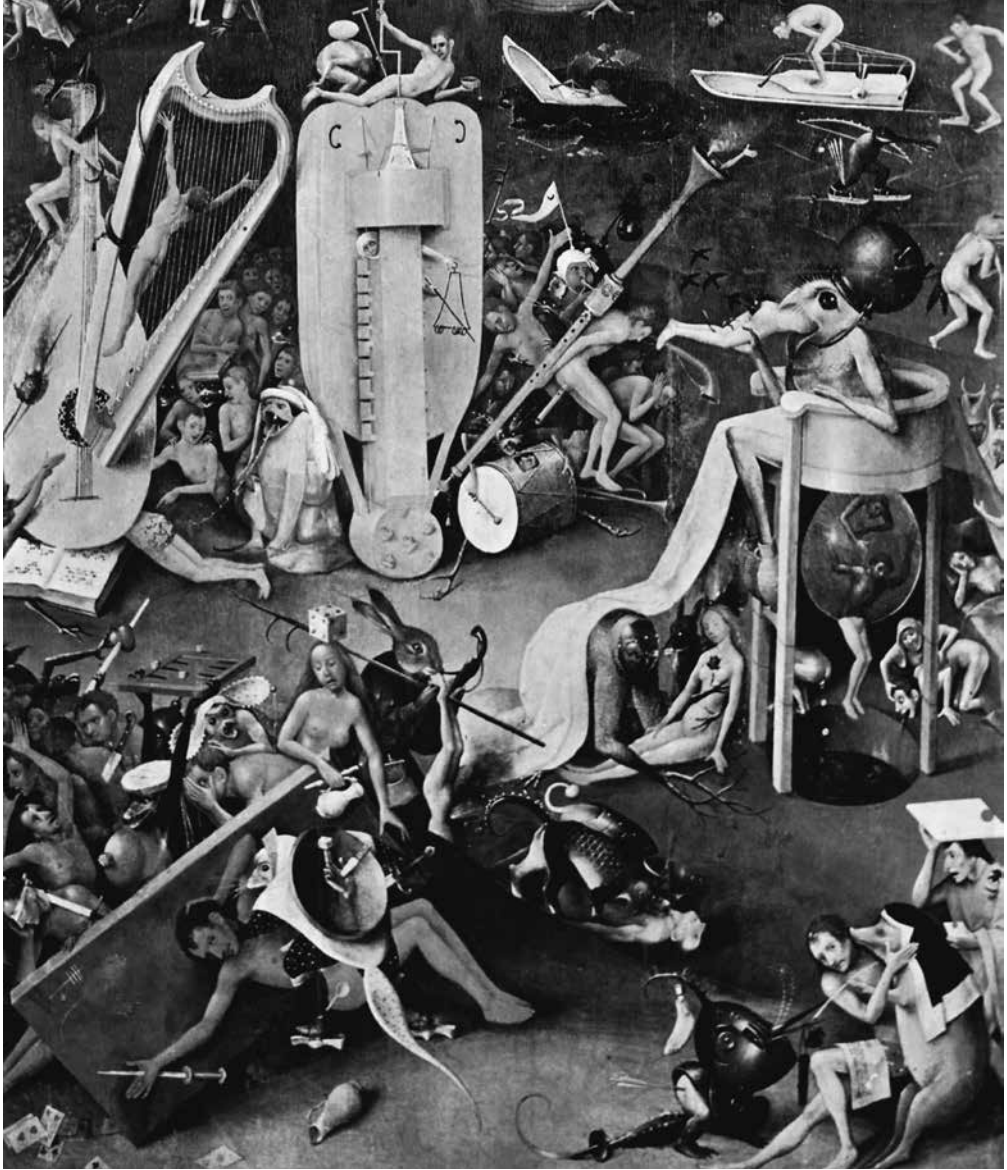
“The Tiger is so kind. He didn’t devour us this time. We must keep making these sacrifices every day to keep Him appeased!”



shrieked, “What must we do?!” The man said, “He’s like a tiger, roaring that loud! Maybe he wants prey. Let us give him our best lamb!” The commune had by then joined them. They shouted, “Let’s! Let’s slay and offer the lamb!” And so it happened, a sacrifice – futile slaughter of an innocent lamb, which was fed to flames, surrounded by primitives yelling their apologies. Within hours, the weather simmered down, and the primitives rejoiced, yelling praises of their Lord.

“The Tiger is so kind. He didn’t devour us this time. We must keep making these sacrifices every day to keep Him appeased!” shrieked a woman. Everyone joined in singing praises of the Tiger. Hundreds of miles away, in the icy uplands, men clad in bear-skin prayed to the Wolf, for His howl was what they heard in the storm, and they had nothing to attribute to the thunder’s deafening roar!

Both these tribes prospered and spread out. One day, a scout of the Tiger’s sons reported a small village up north. A raiding party slipped in slowly in the night and struck the village in its sleep. It was a massacre. The



By Koppas (Own work) [CC-BY-SA-3.0 (<http://creativecommons.org/licenses/by-sa/3.0>)]

barbarians were quick to notice a Wolf drawn in what seemed to be their sacred place, and proclaimed superiority over the being they had discovered only recently. “The Tiger has slain the Wolf. All hail!” was the call. Whoever was alive was taken captive. Superiority was a strategy, but it was attributed to the strength that their Tiger lord had given them. It was the Tiger’s victory – not of those men, who had battled the cold and the dark, and had borne the guilt of slaughter. It was the victory of an ideology, not of an idea. It was said, “They didn’t worship the Tiger, and hence

they lost!” Tribesmen up north were belittled and thought to follow a backward religion – they were called pagans. Fundamentally there was no difference – both had attributed nature’s might to beings they thought were representative. Their circumstances were different, but their intentions the same – to have someone to guide them, to have someone to fall back to in hours of discomfort, and to feel as if their fates were in control – to have more order in their lives. Hence they chose the Tiger and the Wolf, for they were the beings that captured their awe – beings perfect to attribute



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supernatural powers to and worship as guardians of nature. But, as is human nature, we value superiority, and found a competition in what religion one follows. We neglect the fact that every religion is just a guideline, a relief, a route to catharsis in difficult times – and take prejudice against what is plainly diversity and different kind of evolution.

The Lion and the Wolf are merely constructs. Over the ages, a plenitude of religions have risen, forced dominance, and faded away. Invariably, religions have become stringent – more customs to follow to the book. Where did these customs spring from? Did someone descend from the heavens and lay down the rules? No, we humans did! Mark Twain has famously said, “Religion was invented when the first con man met the first fool.” Not to be very extreme – but it is highly logical that religion was a framework designed to control

the masses – something that would be readily acceptable to them – something that could be used to impose order. Maybe that is the reason, invariably, people of significance in religion tend to be control freaks.

Why do I write all this? Because despite all our advances, and all our accumulated glory, we have this one big flaw – that of blindly following a set of tenets so vigorously so as to not even question and improve them. I see billions worldwide sold to religion (or any other communal set of beliefs) – ready to strike for it if need be. Riots have happened in Myanmar recently – targeted at Muslims. A few madmen will create havoc – and their whole “community” will face the repercussion. What happens to these few madmen? They probably get killed, but so do thousands others – for no mistake of their own.

This is not one isolated incident. The

initial subject of this article was actually the situation in Gujarat in 2002 (Gujarat riots). I had planned on writing about Narendra Modi's appropriateness as our next Prime Minister, but I ended up reading about so much communal disharmony while doing research for this article that I found a political question a tad bit trivial as compared to the seriousness of the overall issue of religion leading to fanaticism. There have been the Crusades, there has been historic prejudice, and time and again,

No longer shall we be judgmental, and no longer shall we be vain.



there has been spite – there has been a whole big set of satanic acts for what people think is a sacred cause. What a waste.

My purpose in this article is to make people realise the truth – plead people to be more liberal, develop the spirit of questioning and be rational in making decisions about religion! We are in a modern age – and it is time we took down the barriers in our mind and know that at the end it is nature, with all its bounty and beauty. This beauty and bounty is God – and appreciating God is what every religion on this planet intends to teach its followers. For too long now have the masses mindlessly followed stringent tenets – and allowed themselves to be exploited as vote banks, mobs and rioters. No longer shall we be judgmental, and no longer shall we be vain.

Let us take down the borders and the walls existing in our heads – and make way to wide and beautiful avenues of rational choices. ❖



Abhinav Garg

Abhinav Garg is an undergraduate student in the department of Aerospace Engineering. He takes a keen interest in his major, and on the side, likes to program computers and learn about Economics. His non-academic pursuits include reading, writing, playing the guitar, and occasionally, swimming.

The Boy Who Lived

EKLAVYA MAHAJAN

This is a poem about a young boy,
 “The boy who lived”, to be precise.
 No, not that Harry Potter guy, but someone devoid of joy.
 Only pain in his eyes.
 So here is a tale that I am about to tell,
 of an unheard wail, an unanswered yell,
 of a “jail less” jail, a living hell.
 Well...
 I know things are still unclear, and they might not ring a bell.
 But as we move on, the picture gets clear, you’ll get it dear, what I am
 about to sell.
 So hold on for a while, and enjoy the rhyme.
 Kill your time, for a little while,
 until I find, the best way
 to just say,
 and convey,
 What is on my mind.
 The boy is just seven, in a family of four
 Living in heaven, need to explain anymore?
 Kashmir is the place
 The only paradise, they say on earth’s face.
 So, well, anyways
 These are sunny days, bright sunshine and no haze.
 Everything is fine, but here’s the case,
 Some army men, outside an army base.
 Having some wine and some rum,
 There is our family, and here they come.
 After a day of joy and some fun,
 their house is quite near the base
 Two drunk men come into sight,
 and see the place.
 They barge right in, with masked face.
 One grabs the wife, and she puts up a fight.



Source: Flickr, Surian Soosay

Gives him a bite,
and kicks him tight.
But overpowering her, he clenches her wrist,
drops her on the floor, hits with his fist.
Her man just cannot take it anymore,
His wife being called a whore, as the men tore
whatever she wore,
He sprints right in through the door
While like lions they roar.

But that was his end,
may he Rest in Peace, as a bullet hits his chest.
The elder boy runs to grieve
over his dead Dad, “ oh! how can he leave?”
The heartless men killed him as well
With a thud, on the floor he fell.
As they go on, with the rape,
They see the child, standing with his mouth agape.
They laugh at him and let him live

to see his mother, getting killed.
Tears filled, his eyes cloud. The dreams they built, wrapped up in
shroud.
He cries out aloud, but in the vicinity there is no crowd.
“The lone survivor from the family of four” -
The headline read,
few fake tears shed
by some Government head.
“Won’t happen again” – he said,
Then he goes to bed, with his wife named XYZ.
Everything just lost and forgotten,
Like a dream that goes rotten.
Just one link that remains,
reminding of infinite pains.
Yes, “The boy who lived”,
Lived with eyes that rains.
Lived with lifeless brains.
Lived with a heart sore.
Yes, he is the lone survivor,
From a family of four!



Eklavya Mahajan

A guy in search of a perfect and ideal world - I write poetry as a way of letting out my feelings whenever my heart feels burdened with intense emotions, be it happiness, anger, sympathy or sorrow. I use my poems to maintain balance between solitude and dependence in my life.

Television and its Role in Everyday IITB life

ROHIT NIJHAWAN

An institute-wide screening of the *Game of Thrones* season finale garners more eyeballs than an

Institute Colloquium chaired by a speaker of national repute at India's premiere engineering institute. What are we doing wrong? What's so amazing about a classic TV show like *Seinfeld* or *Breaking Bad* that is in the wavelength of the students it draws and the highly effervescent debates that ensue. It brings out in a student his most opinionated self, the one which was visible to a great degree in his academic ventures until he entered the hallowed gates of IIT Bombay.

What a hugely popular TV show like *Game of Thrones* does so well, is playing on our guilty pleasures and morbid curiosities, thus giving further vent to our addictions. It has been widely accepted amongst the IITB student community that most of us are in a state of detox, after having feverishly campaigned for an elusive berth at IITB. This is reflected in our academic performance, which is barely a shadow of what it was during those 2 years of struggle to get into IIT and our repeated procrastination is also a by-product of the same in disguise. We therefore seek refuge underneath the gloomy HD screens of our laptop, sparing no respite while attempting to topple the IMDB Top 250 movies' list. What we don't understand at the outset is that we are only building up our appetite. Imminently, watching movies isn't enough

What dawns over a typical viewer after completing a series finale is an awareness, one of ultimate guilt, melancholy or poignancy depending upon the intensity of the show.



and we crave for something more to satiate our fervent desires. This is where television comes in, providing a slew of episodes from the most popular sitcoms and thrillers. Often, students comatose into week-long marathons, food and sleep-deprived, and a season that usually spans 4 months, a TV broadcast gets swiped in a day. What dawns over a typical viewer after completing a series finale is an awareness, one of ultimate guilt, melancholy or poignancy depending upon the intensity of the show. The shows today are architected to pander on our guiltiest selves and build on our addictions, all for the sake of improved ratings. What's supremely ironic is that there is a fair chance the TV channel or show has an IIT graduate in their ranks, working somewhere in the analytics department studying viewer demographics and patterns, thus piling on the agony.

The depth to which television has sunk to is debatable but the fact that it has, is still widely accepted. The problem is not confined only to



Artwork by Frits Ahlefeldt available at <http://www.bikingartist.net/>

TV dramas, but reality shows and news shows. From the confines of your TV sets, you can conveniently switch back and forth between right-wing news and left-wing news. Amidst all this, when the dust settles, there is a whole lot more that television brings to the table and its role in our intellectual growth cannot be undermined. Television has brought people together in ways that very few other media channels have. Television took us to the moon. It made the whole country leap with joy at our

legendary 1983 Cricket World Cup victory and the one that followed in 2011. At the same time, it made us all lament and cry together at the death of two beloved Prime Ministers. It's unflinching and comprehensive coverage of the 9/11 and 26/11 terrorist attacks brought the world together. Quoting lines from a famous TV show, what we have nowadays on television, especially the news, is "partisan junk, appealing to the lowest common denominator".

Notwithstanding the effect it has on regular

viewers, the IITB community is especially afflicted by a morbid urge to watch more than its fair share of TV, and I am constantly surprised at the enormous ground we cover in these 4 years relative to our counterparts in other colleges. Surprisingly, television's most prized victims are stationed conveniently at the nation's intellectual capital. An average IITB student by the end of his third year has already watched close to 10 TV serials, and an outlier student would have raked in close to 60. A lot

The institutes' film club, Silverscreen, has claimed some of the most intensively competitive national awards of excellence in film and media, often from the clutches of nationally reputed drama schools.



of this has to do with the huge gender disparity and the innate introvert nature that has flourished here for years. It hasn't necessarily been a bad thing, as a lot of television ventures like Entertainment Engineers and Viral Fever have been raised and nurtured here, and television may proudly claim to be the inspiration for these. The institute's film club, Silverscreen has claimed some of the most intensively competitive national awards of excellence in film and media, often from the clutches of nationally reputed drama schools. The institute's official media body, InsignT, has made a huge difference to the internal affairs of IITB, striving to make the internal setup more democratic each passing day. But, is this worth the opportunity cost to be had with some of the finest minds in the country?

Educational institutes have been wary of this psyche and have been cleverly transitioning their textual study material to video formats. NPTEL and other organisations have

done a tremendous job of centralising video tutorials related to engineering courses, but haven't been able to make enough inroads. Thus, there is a tremendous scope for creative excellence at course delivery and pedagogy which needs to be clinched by the top educational innovators of the country. Michael Sandel's video lecture series *Justice: What's the right thing to do* has become no less popular than the mini-TV series *Band of Brothers*. Many of these TV series have actually served to re-ignite our creative capacities and have proved to be intellectual hot-beds for knowledge dissemination. A lot of these like *Mad Men*, *The Sopranos*, *House of Cards*, and *Breaking Bad* have been nothing short of incredible pieces of art. But, there are some like *Gossip Girl* or *One Tree Hill*, whose content leave a lot to be desired. ❖



Rohit Nijhawan

Rohit Nijhawan is a final year student at the Aerospace Engineering Department of IIT Bombay and is the editor-in-chief of his department magazine, Airspace. Besides being passionate about numbers, he is a movie and TV-buff and has survived close to 4 years in IIT Bombay being an Aeromodelling Club convener, a Techfest core team member and a member of InsignT.

Centenary Celebrations

Teachers are the only true icons when institutional histories of educational institutions are being penned and in the annals of IIT Bombay's own history, one educator who would stand tall in any wall of fame is the legendary Prof N R Kamath of the department of Chemical Engineering.

Prof N R Kamath, affectionately called NRK by one and all, was a man with diverse interests, versatile in various fields be it polymer technology or chemical engineering, history of technology, Kannada literature or technical education. Widely respected and admired by his colleagues and students alike, NRK was an iconoclast and an institution on his own. He had a profound influence on his students both at Bombay University and later when he joined IIT Bombay. The only 'HoD for life', he served as the Head of Chemical Engineering department from 1959 till his retirement in 1974. He was also the Deputy Director of the Institute from 1960 to 1966. His influence on the formative years of IIT Bombay and the Chemical Engineering profession in India was deeply felt by one and all. Students of IIT Bombay from those years will particularly remember him for his brilliant lectures on "History of Technology" given to all fresh undergraduates. NRK was a living example of all that stands for excellence of the first order in the academic profession.

2014 is the year of the birth centenary of this amazing teacher and to honour his memory, Fundamatics dedicates the lead section of this edition to drawing a biographical sketch on his life. To quote Plutarch, that great 1st Century biographer of notable Greeks and Romans, we hope "to not [just] write history but lives" and "arouse a spirit of emulation". The editors would like to inform alumni that an initiative has been set up to launch a chair professorship in his memory and you can find out more about this initiative and support it by visiting the 'Giving Back' page of our website www.iitbombay.org, or by visiting this link <http://iitbombay.org/chapters-and-events/reunions/nr-kamath-chair-professorship/fund-raising-1>

Queenbee



NR Kamath : An Iconoclast and an Educator

QUEENBEE

To all the readers of Fundamatics who have turned to this article, we begin by asking you a question—“How many of you have had a teacher at any level of your education who made you more excited to be alive, passionate about what interests you, and more determined to excel in it than you had ever dreamed?”

Say the name of that teacher to yourself and take a moment to reflect on what that teacher did for you before you proceed.

The chief protagonist of this biographical sketch, Prof N R Kamath, may or may not have been your personal favourite, but captured in his story is the timeless celebration of a good educator—one who leaves a permanent impression upon the taught. And in the recounting of his tale we hope to celebrate him and all other similar educators who have made a difference to our lives.

Born on September 8, 1914, Narayan Rangappa Kamath hailed from Mulki, a small town on the banks of the river Shambhavi near Mangalore in South Kanara district of Karnataka State. He was the youngest of seven children, five boys and two girls. One of his sisters, Bhavani, a school teacher and a remarkable woman, had a profound influence on the formative years of her youngest brother’s life.

NRK completed his early education in Mulki and his SSLC from Government College, Mangalore in 1930 with high credits. He

NRK resigned from his position at UDCT to take up the post of Professor and Head of Chemical Engineering department at IIT Bombay on 2nd March, 1959 where he continued till his retirement on 30th September, 1974



could not gain admission to the much coveted Presidency College, Madras since admission at that time was also dependent on religious consideration and young Narayan, despite his excellent results, belonged to the wrong constituency. He moved to St Xavier’s College, Bombay where he completed the B.Sc. course in 1934 with a unique distinction of securing 100% marks in Chemistry, a record unequalled in Bombay University for the next 40 years.

There were many other firsts to his credit as well. He joined Bombay University’s Department of Chemical Technology in 1934—the first batch of the B. Sc. (Tech.) in Chemical Engineering—and was among the few students who graduated with First Class Distinction in 1936. He was also among the first alumni who would later be appointed as head of a Section in the department. But lest



L to R 1) Prof T. S. Raghunathan 2) Prof P S Murthy 3) Dr Mahajan, 4) Dr G S Nanasimha murthy, 6) NRK 7) Prof. Samir Sarkar

we march ahead too fast, let us return to the story as it unfolded.

NRK was awarded the coveted Nathubhai Mangaldas Scholarship by Bombay University for higher studies abroad after his graduation. He joined University College, London where he successfully completed a post graduate diploma course in Chemical Engineering before commencing his doctoral research work under the guidance of Prof H E Watson on the 'drying of pigments'.

Then disaster struck in the guise of the World War II. The laboratory where he was working was shut down in 1939 and his thesis work was interrupted. NRK took a temporary job at the London Shellac Research Bureau hoping that his laboratory would reopen. But as the war situation worsened, the lab was completely bombed out destroying his work and ending all his hopes of a doctoral degree.

In an interview with two of his students, R V Raghavan and R K Marphatia, NRK mentioned the Blitz in London as the most

outstanding situation in his life: "*when everything I had worked for until then was blasted away... if I have maintained my sanity then it was entirely due to the person who later came to be my wife*". Thus entered on the scene Ruzena, the second lady who was to have the most significant influence on his life.

NRK met his bride in the spring of 1939 at an Opera called *Bartered Bride* by the noted Czech composer Smetana which was being enacted in Covent Garden. The chance encounter soon developed into a deeper bond as they continued to meet through 1939 and 1940. By this time NRK had taken up a long term appointment with Shellac housed at the School of Mines in Edinburgh. But this meant that the young Ruzena could not enter Edinburgh as it was considered a *protected area* then. Thus in 1942, a year in which things were at their lowest ebb as far as the Allied war efforts were concerned, the two decided to take the plunge and got married.

His work during the years 1940-46 at



Prof P S Murthy, NRK and Prof M. C Duivedi and few others

Shellac resulted in as many as 18 publications covering many aspects of Lac utilisation. After the war, NRK got many attractive offers to settle down in UK and at the same time he was offered an appointment as Sir Homi Mehta Reader in Technology of Plastics, Paints and Varnishes at his alma mater. The final decision was influenced by his wife who always knew that NRK wanted to be of use to his country. It was she who convinced him that rather than pursuing acclaim on a personal plane, he would be more useful to his country if he returned to India. NRK thus chose the position in UDCT and returned to India in 1946 to join UDCT, Bombay.

There by 1949, he started separate courses in plastics, pigments, paints and varnishes and laid firm foundations for the PPV laboratory. In 1952, NRK cooperated with Major Hammond, R V Raghavan and others to set up the Colours Society which built excellent relations with the Chemical Industry. In 1958 Prof. Kamath was appointed Professor of Polymer Technology in the Department of Chemical

Technology but this was a year which marked another turning point in his life.

Shri G P Kane, his senior colleague in UDCT, shared a rare insight on NRK while he wrote in the 60th Commemorative volume in 1974 on the occasion of his retirement. He mentioned that while NRK had rapidly acquired a high reputation as a polymer technologist, those who knew him well realised that his real interest was in Chemical Engineering. *“He would have been really happy if he had succeeded me as Professor of Chemical Engineering in the department in 1955. Unfortunately this did not happen as he was identified as an eminent polymer technologist. The chance to achieve this cherished goal came with the establishment of IIT at Powai”*.

Thus NRK resigned from his position at UDCT to take up the post of Professor and Head of Chemical Engineering Department at IIT Bombay on 2nd March, 1959 where he continued till his retirement on 30th September, 1974.

At the time of his joining the department,

Chemical Engineering as a discipline was in a defining phase and the Department itself had a unique structure straddling the twin worlds of Chemical Engineering and Chemical Technology. To add to the diversity, Chemistry was also a part of the Chemical Engineering department till 1964. Prof. Kamath had a very good understanding of not only Chemical Technology but also of Chemical Engineering. His colleague from that period, Prof K P Madhavan, recorded NRK's contribution to

His grounding on the fundamentals of science and his analytical ability was such that no one could get away with a half-baked scientific or technological idea if he made the mistake of presenting it to him- P K Kelkar (Director- IIT Bombay 1970-1974)



the department while sketching the department's history thus: *"With such a broad range of specialisations, it was inevitable that the department would have a faculty group with widely varying teaching and research interests. There could have been problems in ensuring a balanced growth of all the specialisations unless there was an astute head like Prof. Kamath. He was alive to the needs of each specialisation and was successful in evolving an inclusive growth plan for the department keeping in mind the interests of all the entities involved. He made sure that academic freedom did not lead to acrimony between groups with divergent views. Thus the Chemical Engineering Department under his guidance came to occupy the foremost position in the field of chemical engineering in India comparable to any such department elsewhere in the world".*



Professor and Mrs Kamath in 1942

Prof Madhavan also goes on to record that during the early years of running the post graduate programmes in various technology specialisations NRK had often stepped in to offer courses for the organic, inorganic, cellulose, and silicate technology specialisations. The content and style of his teaching, which had a blend of theory and practice, had won him the respect of many students in the department. Nor did his teaching prowess remain confined to the department alone. Students across the institute looked forward to his very illuminating lectures on *History of Technology*, which was a core course in the Undergraduate programme. *"A course on this topic required a teacher with a wide perspective on technology developments over decades. Prof. Kamath had uncannily captured this in his sharp memory"*.

NRK took up the position of Deputy Director in 1960. During this initial phase in the history of the Institute, power was centred on three key personalities - namely the Director,



the Deputy Director and the Registrar. Among the trio, it was Prof. Kamath who held the centre stage as the Deputy Director. At this stage there were no established administrative processes or an elaborate administrative structure. With a skeletal academic staff for support, he undertook the yeoman task of setting up the framework and processes to streamline the running of academic programmes. Together with Prof Kelkar, he was credited for drafting the Institute's earliest academic offerings and considered the 'father of all academic things' who strode the Institute corridors with the 'rules on his tongue'. When JEE was initiated in 1963, it was Prof. Kamath who undertook the responsibility of conducting the examination.

Prof Kelkar also shared that "during the last 4 years of his [NRK's] career in IIT Bombay I had the privilege of having him as my colleague who willingly shared my responsibilities with unusual understanding and ability informed with a sense of loyalty. The effortless ease with which he managed to

satisfy both academic as well as administrative needs is a rare achievement indeed."

Some more light on NRK's administrative contributions can be gleaned from Prof S P Sukhatme's recollections of that period. "As the senior most faculty member in the Institute, Prof Kamath was instrumental in developing the first curriculum and syllabus and also the first set of rules and regulations for the academic programmes. With minor modifications these were in force till the early seventies when Prof Kelkar returned as director after his long stint at IIT Kanpur. He was keen on changing the curriculum by increasing the science content and the humanities and social science content in the curriculum. NRK was not too keen on these changes. However he did not want to be seen as opposing them because of his longstanding relationship and respect for Prof. Kelkar. I was a member of both the Rules Committee as well as the Curriculum Committee set up by the Senate for the purpose and I remember well Prof Kamath's opposition which resulted in some



angry exchanges in the Senate. It is difficult for anyone to see the structure that they have created being removed and that too so rapidly. In hindsight I understand his reaction much better”.

Though, as an administrator, NRK’s focus was on academic matters, his influence went beyond to embrace faculty affairs. In those early years there was no formal mechanism for faculty mentoring, and NRK often assumed the role of a mentor to many young faculty members eager to make a mark in the academic scene in the campus. Prof Sukhatme remembers NRK’s own contribution to his life thus “*When I joined in 1965 I was 27 to NRK’s 51. It was a relationship of a mentor and an adviser who guided but never imposed his will on me. I addressed him as Prof Kamath or ‘sir’ and he followed the British practice and addressed me by my surname alone. Sometimes if he wanted to be mischievous he called me a yankee because of my long stay in the USA.*”

Not all teachers can be educators. But a se-

lect few who achieve that status do so because they leave a permanent impression as mentors who inspired. In NRK’s case the ranks of those who he influenced encompassed not just his students but also his colleagues.

NRK’s colleague, Prof P K Kelkar, pointed out while writing in the 60th Anniversary Commemoration Volume printed by NRK’s students: “*His grounding on the fundamentals of science and his analytical ability was such that no one could get away with a half-baked scientific or technological idea if he made the mistake of presenting it to him*”. At the same time Prof Kelkar was also quick to point out that NRK had an unusual dialectical skill and “*for many of us he was a kind of a trying ground for all sorts of wild ideas*”.

Prof S L Narayanamurthy remembers his contribution in IIT Bombay’s history book *Monastery, Sanctuary, Laboratory- 50 years of IIT Bombay* for this similar ability to provoke. “*He made many of us better teachers than we would have otherwise been, if he had not been asking all the hard questions.*



NRK being felicitated by President V V Giri in 1973

Because of him we knew the limits of so called knowledge, how much more we needed to learn, and that became a huge challenge. He would throw hundreds of questions at us... it sent you scurrying and looking around for answers...the provocation was what made him stand out”.

A dry recording of historical facts cannot compare with the heartfelt narratives of those who lived and worked with NRK and the best character sketch came from Prof Sukhatme who drew a vivid picture of him with these words: “Picture for a moment a person with a wide all-encompassing knowledge of the chemical industry in India and extensive familiarity with diverse aspects of chemical technology. Imagine a person well versed in the history of Science and Technology. Add to these facts an individual with an unmatched ability to speak and write English well and you have the picture of Prof N R Kamath before you”.

It stands to reason then why countless generations of his students, whether it be from

IIT Bombay or UDCT, remember his contributions with affection and gratitude.

Dilip Dahanukar (B. Tech. 1964) described him as a ‘wonderful orator who held the class captive,’ while Dr A L Ravimohan (B Tech. 1967) lauded his ‘inimitable style of debunking all that was not from the real world outside’. Dr Arun Dravid (B. Tech. 1966) writes of him as an ‘inspiration, a motivator as much as a knowledgeable teacher and an encyclopaedic store house of information in his field’. He goes on to write “when it came to polymers, resins, polymer properties, processing technology and its applications, NRK’s authority and mastery was unparalleled. He always left the class spellbound and in awe of his elephantine memory when he rattled off processing steps in the production of one or other of the polymers he was discussing and their applications.”

His student at UDCT, M M Sharma, remembers that he was the only student in his class of 18 who after his B. Chem. Engg degree did not give a job interview as he was

determined to pursue research. *“I remember mastering the courage and decided to barge into the room of the formidable NRK. I have a vivid recollection of his uncanny knack to pose uncomfortable questions”*. To his chagrin M M Sharma discovered that Prof Kamath was not so favourably disposed towards his chosen field of research – Thermodynamics. So imagine his delight and mystification when he decided to accept him as a Ph D student.

On his retirement, the 1974 issue of *Technik* describes Prof Kamath thus: *“Prof N R Kamath was known to students as an iconoclast with a steady store of pointed jokes and covert winks. As Head of Chemical Engineering his name became synonymous with the department. As Deputy Director (Academic) he was considered sympathetic towards students in academic deep waters which ensured a steady stream of supplicants to his door”*.

Stories abound about NRK’s cryptic and dry sense of humour. From the early years at UDCT, G P Kane recounts an encounter in their Tea Club when NRK described a common well-known personality as someone who speaks *“English, Spanish, Polish, Yiddish, Rubbish – with equal ease”*.

His student Arun Dravid points out *“NRK’s lectures were a joy to attend. He would punctuate the lectures with amazing wit and had a subtle sense of humour. Contemporary politics was his favourite topic to take occasional pot shots at and make the class burst into laughter. For some weird reason he would call fellow chemical engineers ‘comical engineers’*.

Prof Sukhatme shared an anecdote involving a hilarious but an unforgettable lesson in the use of appropriate words while speaking in English. It was a day like any other day of the month of May in Bombay (It was Bombay those days). It was hot and humid. At five minutes to two in the afternoon I was rushing towards the Mechanical Engineering department. There was a seminar at two o’clock and I knew Prof Kamath was coming. He was a

stickler for punctuality and I was anxious to reach in time. By coincidence I met him under the arch. . .I greeted him, *“it is hot”* I said and *“I am sweating.”* He looked at me and smiled *“Sukhatme,”* he said, *“Horses sweat, gentlemen perspire”*.

In fact while recreating his life through our research, the picture that emerged was of a man who was a natural iconoclast blessed with both clarity of thought and speech. His sharp tongue was often softened with a touch of humour but it was also deployed to pummel the indiscriminate that had no use for either the bland conservatives or the pure technique mongers. He was principled as only a teacher should be - one whose own life was a study in leadership by example.

He always lived in his small apartment on a busy and noisy part of Sion. He seldom drove his car to the campus. He was always dressed in a jacket and a tie whether in the classroom or in his office as Deputy Director. He was a stickler for punctuality. He usually came to the class from the main building walking the long corridor to the classroom at the department building. He timed his walk perfectly to enter the class on the dot at the start time.

Arun Dravid mentions *“Despite the heart breaking loss of his PhD work during World War II, he never sounded sorry or bitter about it. There was an inner strength and quiet character in both him and his wife Ruzena. It is not that they did not have challenges, pain or sorrows, the most profound of which must have been their childlessness in their long and loving marriage, but they had the strength of character not to show their inner sorrows to anyone”*.

Niranjan Bhat (B.Tech. 1971) shared an anecdote from sometime in Dec 1971, during the Indo-Pak war. *“NRK and I walked through the corridor from the Chemical Engineering Department to the Main Building, with NRK giving me his take on the outcome of the War. He was at that time deputising*



for Prof Kelkar, then Director at IIT Bombay who was away. When we entered the Diro's chambers, NRK took a seat on one of the visitor's chairs. I was surprised and took a seat in another chair next to him. Sensing my confusion, he said I am only the Officiating Director, I do not consider it appropriate to sit in his Chair".

Pramod Phadke (B. Tech.1967) recounts another incident which highlights the sort of man Prof Kamath was. "As the Deputy Director NRK was insistent that the Institute bus should be free for students and staff members. Diro Brig Bose opposed and as a result, we used to pay 10 paise for travelling from Vikh-rolī station to the campus. The bus terminus was just behind Lecture Theatre, presently, S J Mehta School of Management stands at that very place. As a highly principled man, NRK stopped using the Institute bus permanently! He used to take a bus from Sion to Agra Road point where the (hilly) road to Powai originates. He used to walk from there up to the

department. He used to doggedly refuse lifts from colleagues and others".

Prof. Kamath passed away in 1983 during a short visit to Czechoslovakia with his wife Ruzena. She continued to live in India in their home in Sion till her own demise many years later. The life story of NRK would be incomplete without acknowledging the invaluable contribution of Mrs Kamath and the decisive role she had played in shaping her husband's career. Prof Kelkar mentions "Her intuitive feel and idealism had added a dimension to his intellectual approach and realism. Prof Kamath's academic world therefore expanded to include something of the artist's world as well as the world of men of action. I am almost tempted to declare them as joint winners".

When he retired in 1974, in an interview with his students, NRK has left behind these unforgettable words "I do not teach. I am not a teacher. I am not qualified to be a teacher. I am not even competent to be a teacher. I always said that I am an educator. Anyone who would like to be educated, I will help. Anyone who would like to learn, I will help by guiding them".

We are reminded of the words of the great George Bernard Shaw: "I'm not a teacher: only a fellow traveller of whom you asked the way. I pointed ahead—ahead of myself as well as you." The only fitting epitaph we could think of for this great educator. ❖

Note: *We have compiled this history of Prof N R Kamath from the following sources.*

1. Monastery, Sanctuary, Laboratory - 50 years of IIT Bombay. Macmillan, India, 2008 pgs- 286-287
2. Voice of GSB, Vol 6 issue, 3, October- December, 2012, pg 22
3. K G Kudva: Prof Kamath- A Life Sketch, Prof N R Kamath, 60th Anniversary Commemoration Volume, 8th Sept. 1974, Pg 15
4. G P Kane: Prof N R Kamath - reminiscences, 60th Anniversary Commemoration Volume, 8th Sept. 1974, Pg 32-33
5. The Kamaths – A close up - 60th Anniversary Commemoration Volume, 8th Sept. 1974, Pg 19-24
6. Message From P K Kelkar, Former Director, IIT Bombay - Chemical Weekly, May 6, 2014,pg 20
7. K P Madhavan: NRK-Memoir of a Teacher
8. Arun Dravid: Tallest among the Tall, Chemical Weekly, May 6, 2014,pg 194
9. S P Sukhatme: Recollections from a distant past, Chemical Weekly, May 6, 2014,pg 196
10. M M Sharma: My first research Guru, Chemical Weekly, May 6, 2014,pg 197
11. We are also grateful to Niranjan Bhat (B.Tech. 1971) without whose persistent digging for the research and content this piece would have been thin indeed. He also shared some emails from alumni from his

personal communication.

12. We are indeed most grateful to Dr S G Bhat of Sion, Mumbai for the priceless pictures of NRK which are being reproduced together first time ever anywhere. Dr S G Bhat has donated to IIT Bombay the 60th Anniversary Commemoration Volume and other documents which provided a great deal of insight into NRK.

The Little One

SANKET PATIL



Defeated, bloodied, fallen
 A failure's eyes; dry
 Life's rendered us downtrodden
 No reason to smile... or cry.

*Artwork by Cathy Brett available at
<http://wingedreviews.com/category/blog-tour/>*

Laughter's all but gone,
 And memories live; all patches
 Of dreams that nested upon
 A tree now down to ashes.

Tears back—yet to roll
 Down our smothered faces
 Mourning a dear, dead goal
 Must leave behind its traces.

Darkness's all about
 And nowhere a friend, nor foe;
 Not a soul to dispel doubt
 Oh, destined where to go?

Time hath come to still
 In its face we pass instead.
 We must pass, we will;
 Who could bring back the dead?

But there's a little one in there,
 Some call it hope; some, tiny light.
 He joins us at each prayer,
 Mourns he but not one lost fight.

He hath those slave-eyes not
To see his body in terror quail,
To witness dear dreams rot,
Nor ears to sense his spirits' wail.

A little warrior that he is,
Wearing a fearless smile, that child
Hope his name, and nature, bliss
Is heedless to the world out, wild.

Wills us, seem foul times fair,
That we may fight back, unto our death!
Lights us bright, us souls in despair,
That we may see hope at each breath!



Sanket Patil

*Sanket is a third year
Chemical Engineering*

Undergraduate. He loves to write poetry, particularly of philosophical and contemplative nature. He Writes articles and short-stories often under the pseudonym “James Ruskov”. He draws inspiration to write through analyzing the emotions that various life-situations entail, particularly in trying times. He believes it is the toughest of times that enable one to unhesitatingly confront his harshest of realities.

Once Upon a Time there was Earth...

ALI BABA

A friend recently lent me a copy of the book, *A Short History of Progress* by Ronald Wright. Based on the Massey Lectures delivered by him in 2004, it is a book one should certainly read if one wonders what happened to ancient civilizations that produced seemingly amazing feats of engineering like the pyramids of Egypt, the fabulous treasures of the Incas, and the complex cities of the Mayans. Or if one is simply curious – ‘Where are we going?’

One of the *case studies* he describes is the mystery of the massive stone figures dotting the landscape of a tiny isolated island in the South Pacific Ocean, literally in the middle of nowhere. The nearest landmass is 3758 km away, Lima, the capital of Peru. Easter Island, it would seem, was a laboratory where the model of development that the consumer society is embarked upon today has already been tested. It was sighted by Dutch sailors on Easter Day in 1722 and presumed to be a barren island with little vegetation and no trees. The island was estimated to have a population of just a few thousand but had a large number of tall and massive stone figures, some as tall as 30 feet, standing like sentinels along the coastline, with their backs to the sea. It must have been an impressive sight to the Dutch sailors, as they described the statues being as tall as the tallest houses in Amsterdam of that time. A visit by Captain Cook in 1774 found not many inhabitants left, little fresh water, and

visitors were puzzled by the presence of these massive figures on a barren island with scarcely enough people or resources to support such a huge undertaking.



many of the massive stone statues fallen. A catastrophic change seemed to have happened in just five decades. Later visitors were puzzled by the presence of these massive figures on a barren island with scarcely enough people or resources to support such a huge undertaking. Two centuries later, archaeologists have put together the history of civilization on Easter Island from the remains of bones, seeds and pollen left behind on the shores and lake beds.

It seems that Easter Island, or Rapa Nui (the native name for it), was probably settled in the fifth century CE by visitors from Marquesas, about 4000 km to the northwest. They arrived in catamarans with stores of the common Polynesian crops – sugarcane, bananas, sweet potatoes, mulberry –, and animals – dogs, chickens, and edible rats. The island provided nesting for seabirds. Pollen remains showed that the island at one time had rich volcanic soil and had a cover of thick woods of Chilean Wine Palm that grows to the size of an oak. It must have seemed like Eden to the new arrivals. They thrived and the popu-



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lation rose to more than ten thousand and to support such a large population on a land size of just 166 square km trees were cut down to clear land for cultivation. (For comparison, the island city of Mumbai is less than half this area). In the meanwhile, a tribal society developed with clans that probably worshipped their ancestors by carving massive stone heads and torsos, *moai*, that were placed on stone platforms along the shore. As demands on the diminishing resources increased, clan rivalries appeared and the size of the stone images grew larger putting even more pressure on the depleting timber and fibre for rope, making it difficult to transport the *moai* from the volcanic slopes to the shore. There are about a thousand such statues, probably one for each family at the height of the Rapa Nui civilization. Signs of tree pollen in the annual layers of crater lakes disappear by about 1400 CE. The rats brought in by the visitors would have eaten the seedlings and saplings, causing the extinction of any hope for re-forestation after the last tree was chopped down. Easter Island is a volcanic island and standing on edge of the volcanic crater one can get a panoramic view of the island. The shocking realization is that as the last tree was being felled, the people who were bringing it down could not have missed that it was the last tree standing, but that did not stop them.

With all trees gone, *rakan*, the native word for wood acquired a special meaning. The clans probably fought battles to get control of the remaining logs. Without wood to leverage the stone blocks, there was no means left to move the *moai* to the shore, so they remained near the volcanic tuff cliffs from which they were chiseled. Since they could not now be transported, there was also no need to restrict their size and some of the largest *moai* are the later ones and are more than 65 feet long, weigh more than 200 tons and lie on their sides. These massive statues rival the largest stone carvings of the Incas and Egyptians. Wright says 'the people had been seduced by a kind of progress that becomes a mania, an ideological pathology'. By the eighteenth century, when the Europeans first landed, the population had been decimated, with only one or two living persons for every statue on the island. There was no wood or palm leaves to build homes or provide shade, so the survivors were living in caves, fiercely guarding their paltry possessions from each other. Their crafts were made from scraps of driftwood, limiting their options for fishing to shallow waters, and certainly ending all hopes of escape from the island. In just a thousand years, Paradise had been transformed into Hell, by the actions of man.

What lesson does Easter Island hold for us? Are the massive stone statues, *moai*, the



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Like the Rapa Nui, we too have destroyed statues and monuments out of sheer hatred and frustration, in Afghanistan and in our own country.



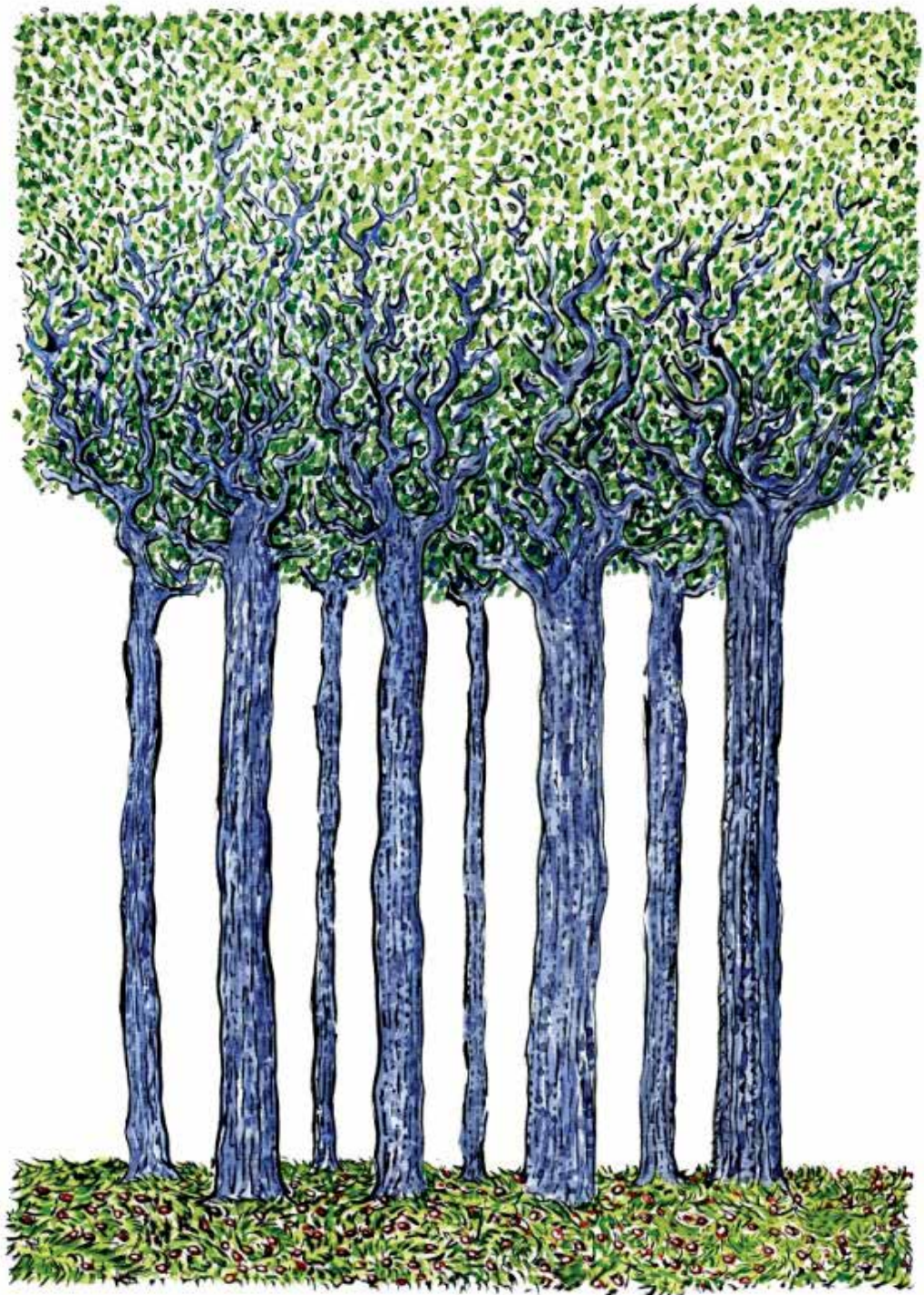
gods of the Rapa Nui sending us a message? Sustainable development may sound like a cliché, but what are the consequences of ignoring the signs? Where are we going? Hope we are not taking the path that the Easter Islanders took. So we must wonder when we hear talk of building statues in the middle of the ocean and on a riverbed. Statues to rival the Statue of Liberty, in keeping with our ambitions to be a superpower. Like the Rapa Nui who fought battles for wood, the present superpowers have fought wars for control of oil and gas, the fastest depleting natural resources on our planet, Earth. Like the Rapa Nui, we too have destroyed statues and monuments out of sheer hatred and frustration, in Afghanistan and in our own country. Are

we letting ourselves become victims of this ‘ideological pathology’? Will the title of this piece become our epitaph. ❖



Prof. Aliasgar Qutub Contractor

Prof. Aliasgar Qutub Contractor, former HoD of Chemistry Department, former editor of Technik and former Dean Alumni and Corporate Relations, is an alumnus from C'73. Endowed with a rare gift of narrating serious and heavy matters with a tongue held firmly in cheek, his incisive and informed views on IIT Bombay and alumni relations are in evidence in his column Sim Sim khul ja. He is currently 40 thieves short of his target.



Art work by Frits Ahlefeldt available at <http://www.hikingartist.net/>



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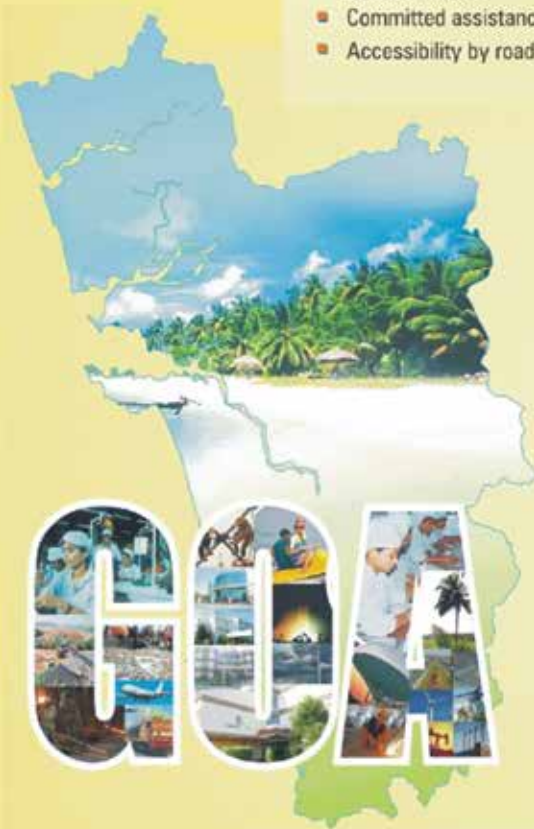
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The Toothbrush of Paisa Vasoolism

BUMKUMBEE

I am Bankim Biswas and what I write is a lot of bunkum and wishwash. This issue of Fundamatics is themed around the students of IITB. Students learn an awful lot in 4 years inside the classrooms. There is a lot to learn outside the classrooms too. Sadly, one important lesson from yesteryears seems to have gone out of the outside-the-classroom-curriculum. Let me try and explain.

You've all heard about a toothbrush, right? You've all used it in the mornings. Some have used it also at nights and few have used it once a week. When some obstinate old school students persisted with datoon and coal and Vajradanti, toothpaste manufacturers sold a toothbrush free to every family that bought a deluxe pack of toothpaste. Some brushes came to us via Colgate, some via Binaca and some others via brands that folded up, thanks to bad marketing ideas from guys who charged lakhs to name a toothpaste as Promise. (remember that "oof oh! Ek aur naya toothpaste" by a middle-aged nanny whose teeth were delicious enough to bite into?) We are told that she was actually using Close-up.

Anyway, let's come to the point. We brushed our teeth till the brush wore out, sometimes faster than our teeth and sometimes not. But our moms, grandmoms, aunts and servants did not let us cast our brushes away into the dustbin. In fact, they retrieved it from there and used a used-up

brush to polish steel vessels and clean stain marks from curtains and kitchen sinks. Years later, the bristles wore out. Faster than the hair on the bald man's pate whose teeth had also fallen off by overbrushing his dental infrastructure. Never mind! Said the nannies and other practitioners of the paisa vasool culture. They used old discarded scissors to shave off the brush and were left with a solitary plastic handle with an eye-hole that was once used to string the brush onto a hook above the wash basin. This eye hole now served as an anchor... a place-holder for the pajama cord (nada, if you please) that was quickly knotted into the hole and the now neo handle was an agile contraption that would embark on a tour of the cord slot and ensure a cord's firm travel from one end to another. This was a crowning moment for the Indian machismo male. One who could not hold a pajama up without a cord. Nimble fingers, used up handles saved by paisa vasool womenfolk often came to the rescue of these gents who knew how to oil their hair, wear kurtas, but knew not how to make a cord permanently stick out of both ends of the narrow tunnel that was designed for thin strings, not fat fingers.

At most times, brushes outlived their owners. In their journey in this world to wear out enamel, polish sinks and run through pajamas, toothbrushes lived

slightly less than four score and ten, while the owners of teeth and pajamas lived much less than three score less ten. In short, paisa vasoolism was in and a fashion statement. People who could afford to hire an upstairs maid and a downstairs maid, and even a mid-landing maid recounted to us tales about how they asked for a “teesra panama” at 5p when the rates were 8p for 1, 15 p for 2 and 20p for 3, in the H4 canteen. There was a compulsive and an urgent need to show that “I am not a fool”. Save money, spend it wisely, make a purchase go far into time and into distance—these were the mantras that came naturally to most conservative Indians. Indians who were conservative because they conserved, not because they were non-liberal. Similar examples of practising paisa vasool culture

We brushed our teeth till the brush wore out, sometimes faster than our teeth and sometimes not. But our moms, grandmoms, aunts and servants did not let us cast our brushes away into the dustbin.



abounded. A shampoo was good if, and only if, its bottle could host chilli flakes within its environs, long after its erstwhile contents had disgorged egg and oil on hair that was going to wither away anyway after practising so much paisa vasoolism. Plastic bags that screamed Amarsons were used to buy vegetables....bhindi and mutter.... from Amar Singh’s son’s grocery store. Your Charag Din shirt, after travelling from your torso to your younger sibling to your son to your driver, is now used to wipe your windshield by your driver who now sports a Tommy Hilfiger, thanks to castaways from

the non paisa vasool neighbours. How often have you retrieved phone numbers from tissue papers that you scribbled into before you blew your nose and snot into its cellulose structure? Even the wealthy who spend more time making money than saving it, like the guys who buy an expensive treadmill in the hope that they will knock off flab from the nether regions when and if they have the time, eventually hang their towels on the treadmill while looking at it forlornly and say, “Don’t worry dear! I’ll walk over you sometime before I become fatter than my bank balance. Till then, hang my towel and my undies on your SS arm.” Have you heard the tale of 3 friends who used to hang out at a tea-stall in the capital of paisa-vasool territory viz. Amdavad (sometime known as Ahmedabad in a pre-Modi era)? The instruction from the 3 friends to the waiter boy was standard: “Aye Chhokra! Ek cup chaa! Teen rakabi (saucers), aaj ka chhapa (newspaper), pankha (fan) full aur baar ek najar (nazar) cycle par.” That was the ultimate in paisa-vasoolism. Maximise your returns on the one rupee investment. A tea split into one-by-three. Each drinker gets a saucer, a newspaper, fan and a watch on the cycle parked outside.

Concept was good. Learning was swift. Practitioners of this cult were near perfect. Perhaps IIT should have introduced a course on this important aspect within its classrooms. Learning outside the hallowed halls lost out due to impossible demands of submitting assignments on time. There were two adverse effects of this learning process. Most learnt that paisa had to be vasool, but did not learn how. One learnt that tomatoes could be bought cheaper by a rupee to a kilo in the market 10 kms away, but did not learn that he would expend 100 rupees of fuel to save 10 rupees. Guys woke up early morning, polished and gleamed their BMWs to participate in a treasure

hunt that would give them a 1K prize after expending 2K of fuel. Guys bought cars only because their cousin promised them that he would give them a 10% discount on JK radial tyres after he got that agency. Folks rushed to a store that sold a compass at 50% discount without realizing that when they needed a compass next, they would rush to the store again because they forgot that they had bought a compass, leave alone remember where they had stored it. The concept started failing because the practitioners didn't learn it right. If you tie an electron microscope to a string, lower it from the terrace to the ground to measure the height of the building, is it the fault of the microscope? the string? or the practitioner who should have picked a pebble and not bought a microscope?

Guys had started learning this bad. But there were a few who learnt it worse. Some forgot the message that there was an attempt to save money and conserve. They picked the end result and aligned that with their primary objective. When they saw a senior wearing jeans faded and torn, they liked it (facebook-ly speaking). They forgot that it was still cloth that covered most of the body. They saw a fad in the fade and the tear and they now flocked to posh malls to buy jeans that were equally torn and faded. Except that they were pre-torn, pre-faded and paid for overheads of an air-conditioning system and English speaking sales-girls. They ripped the plaster off their walls in their Worli seaface flats, bought cowdung at exorbitant prices (rued the fact that there was no decent brand selling cowdung in posh stores with home delivery facilities), hired designers to plaster their walls with dung and announce a glitzy house-warming for their natural home which was designed with eco-friendly and green objectives. (Yes cowdung was green, but available at a premium because the city environs now

resulted in dung that was mostly a sickly yellow/brown). Paisa-vasoolism was under a siege. A threat. Condemned to extinction. Just try this experiment some day. Get an old toothbrush handle. Print Adidas on it and market it as a "nada leader". Guys will trip over each other to buy a pack of a dozen. They will then buy a dozen pyjamas in order to use this cool dandy contraption. Much like they buy hookahs to imbibe grape and apple and cider.

Come to think of it, paisa-vasoolism is extinct. Isn't it because the paisa itself is extinct? If you like this piece, donate 10 lac paise for Fundamatics. We promise to vasoolify it for you. 10 times over.

Bunkumbee.



Bankim Biswas

I am Bankim Biswas. What I write is a lot of bunkum and wishwash. Maybe, I should have been an economist. This economy shiconomy business could use my talent. I was born in 1960 and amongst the 17% of the human race that has lived through the sixties. Maybe it's not 17%. Who knows? Who knows through all this bunkum, wishwash, and economy?

The 'Z' Axis - An Eye in the Sky

NOSEYBEE

Back in 2006 residents of campus, while walking across the Main Building, might have chanced across a bunch of wild-haired boys flying a strange drone-like contraption in MB lawns. Apart from the occasional curious look up towards the sky they may not have merited a closer look. Some of us did take a second more interested look when we discovered the same drone in the hands of Aamir Khan (playing a young whizz kid innovator) in the hit movie 3 Idiots.

What happened to the wild-haired boys after that brief flash of fame as they disappeared from the lawns? Does the bid to cut curricular monotony and following own heart find a happy ending only in the reel life world of celluloid? Or, is there a similar happy ending to be found in real life as well?

Noseybee dug out the real Phunsukh Wangdu behind the 3 Idiots story, a team of 5 young men - Ankit Mehta, Rahul Singh, Ashish Bhat and Amardeep Singh - from IIT Bombay earlier this year. The crazy hairdos had been replaced by formal button-down shirts and sharp-creased pants and yes, they did follow their dreams and what happened afterwards is this - their story.

Amardeep met Ankit in the summer of his first year at IIT. Ankit was his senior as were Rahul and Ashish. Even though they belonged to different batches and departments, a common interest in Robotics brought them together. Ankit was heading the innovation

Innovation is no sudden flash of discovery but a slow burn of dogged experiments and incremental improvements till you have a product ready for market.



cell called UMIC while Ashish and Rahul were both involved in Techfest. Ashish had already acquired a reputation as a tech whiz kid who was the reigning Tsar of all the micro- mouse competitions at Techfest. Together they had participated in many tech competitions including representing India at Robocon, Beijing.

Ankit graduated first (in 2005) and although he did take up a job, he quit soon after and returned to Mumbai to rope in Rahul & Ashish who were slated to graduate the next year. Together, they formally registered a company ideaForge (in 2007) and started developing some alternative energy products,- a hand-crank charger and a bicycle charger for mobile phones, both targeted for rural, energy- deficient markets.

During this time, Amardeep was still finishing his final year in Aerospace Engineering and his final year project was to build a UAV - Unmanned Aerial Vehicle (in 2008). During the same year there was an international competition floated by the U.S Military. The IITB



aerospace dept approached ideaForge to build a UAV along with its students which could be a contest entry at the competition. It was also agreed that the Indian military and ideaForge would get together and participate in this competition. The IITB- ideaForge team won first prize along with MIT, USA in the hovering class of UAVs.

This was also the time when a fourth member joined ideaForge. Vipul, Ankit's school friend who had just returned from Switzerland after completing his MBA, was looking to start his own venture but decided to join them. Amardeep did the customary placement office job interviews and had the requisite job offer, but he too decided to cast his lot with the ideaForge team. All the pieces of the puzzle had now fallen into place and the original team was together, all set to build and take their UAV to the market.

These were early days yet. The startup sentiment — celebrating the initial idea-high of entrepreneurship (after all they had just won a major international competition) still needed to get grounded into concerns of the realities of day-to-day operations, and yet always keeping those big-picture entrepreneurial ideals as the guiding light to overcome the mundane obstacles.

At this stage what team had was still a crude model and that too they were a start-up making a hardware product where the main customers were government organisations

with longer timelines to market. To make the task doubly difficult, they had entered a market where most potential customers had almost no idea about the product that they were making and its numerous applications. The initial years were spent educating the potential customers about UAVs and their numerous applications. The marketing team of ideaForge spent valuable time doing hundreds of demonstrations at No Cost No COMMITment basis.

An interesting little-known anecdote worth sharing here is that it was Dia Mirza who first read about their drone in the newspapers and told Rajkumar Hirani about it. The ideaForge team was invited to fly it at the shoot at Bangalore and when we saw Aamir Khan flying the drone, it was with a dummy remote in his hand while the vehicle was actually being controlled from the background by the boys from Mumbai. They were at the initial stages of their venture and agreed to work for free for the publicity. Not a single penny was offered or earned from that shoot. Another colloid fantasy of a quick buck and fast fame dashed!

At this stage ideaForge was already incubated at SINE, IIT Bombay's own technology and entrepreneurship incubator. The team spent a lot more time at SINE than is usually given, but while they needed the open skies of the campus to test and improve their product, they were also adding employees and fast



running out of the space necessary for them to grow. So the team was forced to split with Ankit, Vipul and Amardeep working from new makeshift offices at Chandivali while the R & D team of Rahul and Ashish stayed behind at IIT. In hindsight this was a big mistake because every decision that needed team consensus took more time than before.

One also needs to keep in mind that innovation is no sudden flash of discovery, but a slow burn of dogged experiments and incremental improvements till you have a product ready for market. Long before ideaForge came into being, when Ashish, Ankit and Rahul were mere students, their first model was built without any sophisticated electronics, just motors attached to four propellers and a battery propelled by little but hope that the machine could take off from the ground. The battery was exposed wired on the outside of the machine and once while testing it, all of a sudden and without any sort of intimation, the machine suddenly shot up and came tumbling down after cutting every wire around. It was a scary and scarring experience and it was a year before they could return to working on it again. Even when they finally built the first version of the UAV at ideaForge, called *Zeppelin*, it was to go through many rounds of modifications and improvements morphing from Zep 1 to Zep 2 to Zep 3 to the more squarish structure called *Carbon* which was the closest to the current version called NETRA.

An essential quality of a true entrepreneur is also the ability to spot a serendipitous opportunity as it arises as a by-product to deliberate effort – something ingeniously termed as ‘chance opportunism’.



To match the best in the world and keep at the frontiers of tech innovation, NETRA even today is continuous work in progress with the R & D team working on continuous modifications and improvements.

An essential quality of a true entrepreneur is also the ability to spot a serendipitous opportunity as it arises as a by-product to deliberate effort - something ingeniously termed as ‘chance opportunism’. The ideaForge team grabbed such an opportunity when they got a slot to exhibit the system at an exhibition at Pune even though they lacked the necessary funds to pay for an exhibition stall. This was when *Zeppelin* was still work in progress between Zep 2 and Zep 3, and although the team got a lot of compliments there were still no orders. It was almost as if the tech geniuses who had pulled a ridiculous number of all-nighters problem-solving for a better product found themselves in over their heads as BUSINESS people, and the story was going to



end right there with an unpleasant thud.

Thankfully, around four to five months later, DRDO got in touch with them to suggest a collaborative partnership. The UAV became a collaborative product. ideaForge got the DRDO name and with it came greater credibility. The next time around when they exhibited *Carbon* in Delhi (in 2010), they were more assured. Not only did they avoid the usual path of working through middlemen so common in defence contracts, thanks to their IITB instilled self-confidence, but more importantly it was backed by a staunch belief in the quality of their product.

They got their first real customer after the exhibition in Delhi when the UP Special Task Force invited them for a demo and placed an order for *Carbon* through the tender process. The collaborative partnership with DRDO led to a rate contract with DRDO and *Carbon* morphed into NETRA – truly an eye in the sky. The rate contract not only acted as a reference for pricing to potential customers, but also helped in speeding up the procurement process.

Today three years down the road, NETRA is widely recognised in the industry as a revolutionary innovation in the realm of Homeland Security - a light-weight, autonomous UAV which can be used for intelligence, surveillance and reconnaissance of moving and fixed targets. The UAV can be used in anti-terrorist and counter-insurgency operations, hostage

situations, border infiltration monitoring, law enforcement operations, and search-and-rescue operations and disaster management.

It took more than 7 years of continuous evolution, but NETRA's product features today are an impressive catalogue - it includes the ability to stream real-time video of the target area with spotless clarity and to fly up to 4 kms with an endurance of 40-45 minutes. The use of lightweight *carbon* fibre composites in the machine means that it only needs two people to carry and operate the system in field locations. It flies by four high-speed rotors which permit a Vertical Take-Off and Landing (VTOL) providing the power to soar through the skies and enabling its operator to execute operational manoeuvres even in the most constrained flying environments. It is equipped with advanced programming of fail-safe modes both during day and night.

But none of these factoids can compare with the sight of this small but powerful machine that swoops up straight into the sky while you stand and 'look' through its eyes, feet still firmly fixed on terra firma. It convinces you that this is indeed the real McCoy not some gimmicky contraption wrapped in fancy packaging.

The original ideaForge team has now expanded to 35 members including R&D, manufacturing, admin, operations & marketing. Their manufacturing base is in Navi Mumbai where they manufacture, assemble,

test and package the systems with streamlined processes and strict quality control in place. These are made-to-order systems and cannot be stocked in numbers. Last year they sold 32 systems and have sold 70 of them in total since the first sale. In case you think that 70 is a small number, you will soon change your mind when you hear the price tag that the little babies come with ! But let us just leave it by saying that this is one of those products which comes with the tagline “price on request”.

The names of their numerous customers - at least the ones that can be shared in the public domain – include CRPF, NSG, Mumbai Police, Gujarat Police , Kolkata Police, BSF, NSG and UP Special Task Force. It was deployed by local law enforcement during a political rally in Chandigarh. Gujarat police purchased two systems and it was also deployed in July 2013 during the 136th Jagannath Rath Yatra. Ahmedabad became the first Indian city to use UAVs for crowd management by its own personnel followed by Kolkata which used it for Bhashan crowd management during Durga Puja celebrations in October 2013.

Not bad for a team of wild-haired dudes who ventured out with little but a spark in their eyes and a dream within their heart, right?

So is this the happy ending to the story we had started out looking for?

Not by a long shot. Every extra rupee they are earning today is still being ploughed back into the BUSINESS. They have reached the roadblock that every successful enterprise hits at this stage of the game, the problem of scaling up and associated funding issues. Without quick capital inflows it won't take too long before it starts affecting other aspects of their BUSINESS. So far their customer base has been confined to paramilitary forces, state police departments, armed forces and DRDO labs and although they have avoided paying a single rupee in bribes (defence contracts are notorious for them as we all know) by following a top-

down approach of convincing the senior-most authority, having a non-mainstream product whose uses are still not fully understood invariably slows down the decision-making process and hence any eventual sale.

They have to also constantly battle the popular perception of a drone as a weapon of destruction. For instance, few people know that two NETRA UAVs were used in Uttarakhand by the National Disaster Response Force last year during the disastrous floods in

NETRA is widely recognized in the industry as a revolutionary innovation in the realm of Homeland Security - a light-weight, autonomous Unmanned Aerial Vehicle which can be used for Intelligence, Surveillance and Reconnaissance of moving and fixed targets.



Kedarnath for locating people. This was the first time that UAVs were deployed in a disaster rescue operation. The real-time monitoring of their video feed used on Kedarnath trail at Jungle Chatti & Gaurikund areas in the aftermath of the floods could help locate hundreds of survivors with precision.

While NETRA's defence applications are fairly straightforward there are other commercial applications where UAVs could be deployed successfully. Aerial photography, power line monitoring, oil & gas pipeline monitoring, map generation, 3D terrain mapping, campus security, pollution checks, fire scouting, traffic management, monitoring large plantations, wildlife and habitat conservation to name just a few. One can't help but feel that the future for ideaForge and NETRA lies in this direction



and large-scale funding will follow if the company works out a wider service model for their BUSINESS in the commercial application space.

As we leave ideaForge at this stage of their story, one thing is obvious - more important than simply building a product, these are people who are in the process of architecting a company that in time has the potential to be much more incredible, than the sum of its parts. In a country long starved of any manufacturing success stories, theirs is an empowering tale of success in venturing into a space where few have dared to step before; an apt role model for thousands of bright college kids tinkering away at their colleges and institutions right at this moment with an entrepreneurial dream in their heart.

It is not mere accident that right at this moment there is a bunch of fresh-faced kids who can be found busy working away on a contraption at the IITB swimming pool. It is supposed to be an AUV – an autonomous underwater vehicle which is IITB's entry into a global robotics contest this year. Nor is it accidental that it is called MATSYA. Nosey hopes

that the readers see the pattern here and that team ideaForge can feel some justified pride in their trailblazing role.

Nosey is convinced that given a few years, it will write a sequel to the Z-axis story called the 'View under water' and already has its long nose perked for that one. ❖

Did you know the King who wept?

K S S KARTHIK

Mountains and meadows, deserts and forests,
Lands apart and Moons away,
Plains and seas, springs and mists,
A small known kingdom lay.

Castles and huts, spires and mires,
A kingdom of joy and gay,
Nobles and beggars, lords and ladies,
Streets decorated with spray.

Hedges and gates, rivers and lakes,
Soldiers waited on the quay,
Ships and boats, merchants and fishers,
Impatient of the delay.

Oars and sails, gulls and mills,
The king was brought in a dray,
Tinkers and tailors, gaffers and toddlers,
'Twas not a joyous day.

Bakers and makers, subjects all,
Bestowed upon him their bays,
Knelt before him, the soldiers and all,
Silent, as the king so lay.

Heavens wept, rivers hushed,
None wished for this day,
Silence stilled, weepers calmed,
Goodbyes they had to say.



Image Credit "Illustration by Shell Game by Molly Crabapple available at <http://mollycrabapple.com/page/4/>

Huffing and heaving, careful and cautious,
The king was sent on his way,
Grieving river, weeping sky,
Carried the king away.

Pearls of tears slipped from his eyes,
Bottom of the river they lay,
The king wept to see them off,
Or so they were to say.

Mountains and meadows, deserts and forests,
Lands apart and Moons away,
Suns and Moons, seasons and years,
A neigh lad sat on a stairway.

Esquire's son, an old knight's pride,
Caught the knight in the garden one day,
And so did he inquire *curiously*,
Did you know the king who wept?



K S S Karthik

K S S Karthik is currently in his fourth and final year at IIT Bombay pursuing a Bachelor's degree in Computer Science and Engineering. He is interested in sketching, writing poetry and fiction, especially epic fantasy and science fiction. His blog : www adayinfantasia.blogspot.com

'Polt' of Students Gymkhana Elections

BUMBLEBEE

What makes this 4th edition of Poll Khul Gayi (PKG4) unique?

- PKG reappears after a hiatus of almost 15 months.
- This poll was conducted only amongst students of IITB, since this issue is extensively student-centric. Alumni and faculty were deprived of the opportunity to click on checkboxes.
- This poll was about polls - about the gymkhana elections, which have miraculously survived since the 60s, much like the Lok Sabha elections which make us proud that democracy is alive and thriving in India.

It is strictly a coincidence that the students of IITB decided to do a poll on the gymkhana elections during the much-talked-about General Elections that are currently underway. Disclaimer: This piece is being written on the 10th day of May, 2014. You are likely to read this after the 16th of May. We are not sure whether, by the time you read this, India has been Modi-fied or Kejri-walled; whether it may be singing a new RaGa or, maybe, led by a front sitting in the third row from the back.

Current Gymkhana office-bearers may be pleased to learn that some of the leading and respected politicians who are IITB alumni honed their skills at electioneering during their student days at IITB. Aadhar King and maybe-an-MP-now Nandan Nilekani was a

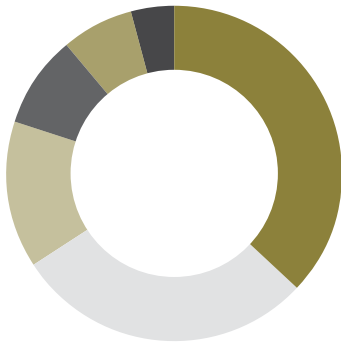
popular GSSA. Goa CM Manohar Parrikar was the Mess Secy and G-Sec of H4. Minister Jairam Ramesh (we're sorry if he's not a minister anymore when you read this) was a culture culture who won many trophies for IITB. We're not sure if former Health Minister of Gujarat Jai Narayan Vyas held any post during his 2 year M. Tech stint (He's from H1). Former BJP ideologue Sudheendra Kulkarni too was politically active on the campus, though as a notorious rebel who fought against the system. We are not sure if politician-alumni from other IITs ever contested elections within their respective gymkhanas. Going by the antics of some alumni like Union Minister Ajit Singh, former Delhi CM Arvind Kejriwal and former Delhi Minister Somnath Bharati, we would be very surprised if they didn't rouse any rabble back then!

While we find that a lot has remained unchanged for over five decades-even the names of various posts is the same as before-a lot has changed. We are not sure if it has evolved for the better or worse. Since the poll was relatively simple in as much as it was conducted amongst the students alone, our Graph-It-I section does not show any comparative graphs between students, alumni and faculty, as in the case of our first 2 polls, or between males and females, as in the case of our third poll which was conducted to seek opinions about the rapes in India that had outraged an entire nation in the wake of the 'Nirbhaya' case. We made do with some simple self-explanatory tables. All tables and all charts always tell a story, and the tables that accompany this piece are no different. But again, all tables and all charts leave many stories untold, and we always seek to unravel the untold stories in our Poll-Ination section.

We do hope that future issues of Fundamatics, 20 years hence, will feature interviews from PMs, CMs, ministers and other eminent folk who are currently office-bearers of the Students Gymkhana of IITB.

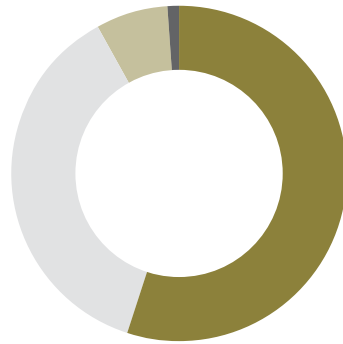
Graph-It-I

On what basis do you vote for a candidate?



	TOTAL	%
■ Soapbox/Campaigning	118	37%
■ Manifesto	94	29%
■ Acquaintance/Friend	44	14%
■ Recommended by a friend (Ex: "Iska dekh lena yaar...")	30	9%
■ Random	21	7%
■ Belongs to same hostel/department/club etc	14	4%
GRAND TOTAL	321	100%

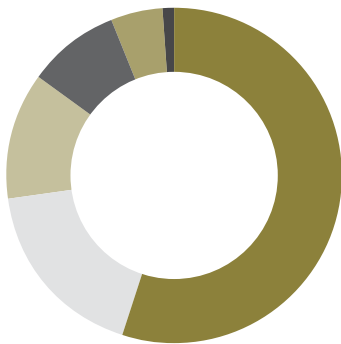
Do you think the most deserving candidate always wins the election?



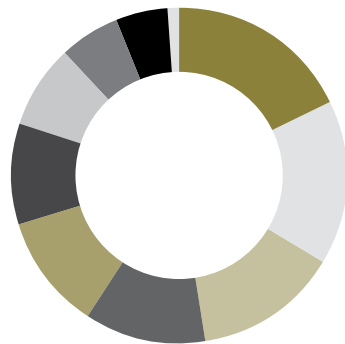
	TOTAL	%
■ No	176	55%
■ It's democracy, you can't say Yes/No	119	37%
■ Yes	22	7%
■ Doesn't matter	4	1%
GRAND TOTAL	321	100%

From what you have seen and heard, why do candidates contest in elections?

On a scale of 1 to 10, how would you rate the election system in institute?



	TOTAL	%
■ The additional spike in the CV	176	55%
■ Power that comes with the position	57	18%
■ Publicity from POR	40	12%
■ Genuine Interest	30	9%
■ Other	16	5%
■ All of the above	2	1%
GRAND TOTAL	321	100%



	TOTAL	%
■ 6 ●●●●●○○○	57	18%
■ 7 ●●●●●○○○	52	16%
■ 8 ●●●●●○○○	46	14%
■ 1 ●○○○○○○○○	38	12%
■ 5 ●●●●●○○○	34	11%
■ 4 ●●●●○○○○	32	10%
■ 2 ●●○○○○○○	25	8%
■ 3 ●●○○○○○○	19	6%
■ 9 ●●●●●●○○	16	5%
■ 10 ●●●●●●●●	2	1%
GRAND TOTAL	321	100%

According to you, is the quantum of expenses (on flexes, treats, election fees etc.) during & after the election process a negative factor for some potential candidates?



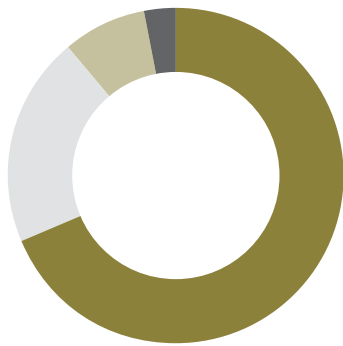
	TOTAL	%
■ Unfortunately, this is unavoidable	161	50%
■ No. It is just too expensive	92	29%
■ Yes, this is necessary	68	21%
GRAND TOTAL	321	100%

Are you satisfied by the rules and measures set in place by the gymkhana election committee?



	TOTAL	%
■ No, it needs to be more robust	172	54%
■ Yes, they are doing their best	82	26%
■ What rules?	40	12%
■ Maybe	27	8%
GRAND TOTAL	321	100%

Generally, do you think that candidates follow fair and ethical practices at the time of elections?



	TOTAL	%
■ No	219	68%
■ Maybe	65	20%
■ Yes	26	8%
■ I don't give a damn	11	3%
GRAND TOTAL	321	100%

How much impact do the elected representatives have on your campus life & experience?



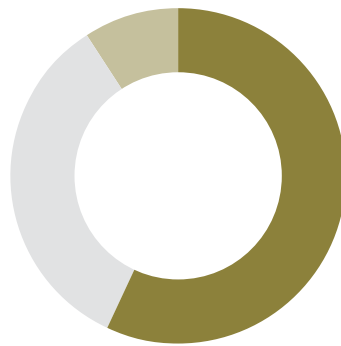
	TOTAL	%
■ Not much in their hands	157	49%
■ Very high	99	31%
■ Nothing at all	65	20%
GRAND TOTAL	321	100%

Comparing Institute Elections with National Elections, which one is more fair and transparent?



	TOTAL	%
■ <i>It is like comparing apples and oranges</i>	151	47%
■ <i>Institute Elections</i>	111	35%
■ <i>National Elections</i>	36	11%
■ <i>I don't give a damn</i>	23	7%
GRAND TOTAL	321	100%

Do you believe reforms are necessary in the structure of the election committee?



	TOTAL	%
■ <i>Yes, a complete revamp is needed</i>	182	57%
■ <i>Only few changes are required</i>	109	34%
■ <i>No, this is the best system possible</i>	30	9%
GRAND TOTAL	321	100%

Poll-Ination

As we mentioned earlier, the tables tell their own story. But the most obvious inference may be lost to most readers. The respondents number a paltry 321 from amongst about 8800 students of IITB. Is this a case of bad messaging? Lack of interest? Or voter apathy? It may be some time before our students learn something from the average Indian voter who recorded a massive 62%+ polling percentage by standing for hours in long queues in the hot sun for the recently concluded Lok Sabha elections. This edition of PKG was like its predecessors, an online poll which was mouse-click-friendly and could be indulged in in the comfort of one's room. To the questions "*Generally, do you think that candidates follow fair and ethical practices at the time of elections?*" and "*Comparing Institute Elections with National Elections, which one is more fair and transparent?*" there was an option which said "*I don't give a damn*". It now appears that most non-voters do not give a damn about participating in polls!

We noticed another striking difference as compared to our previous 3 polls. In our earlier polls, most answers were overwhelmingly similar, to the point of appearing near unanimous (almost 80%+ in most cases). And in the few questions where the answers were divided, the division was almost vertical. Too close to the 50% mark. We had even commented that IITians were like minded and proved the adage that "wise men think alike".

The respondents number a paltry 321 from amongst about 8800 students of IITB. Is this a case of bad messaging? Lack of interest? Or voter apathy?



However, in this poll, we do not see any overwhelming affinity for any answer. To quantify our argument further, let us look at the percentages of the "winning answer". 37%, 55%, 55%, 18%, 50%, 54%, 68%, 49%, 47%, 57%. What does this prove? Are the current students not wise men who think alike? Or maybe they're wise, but not yet men.

The fact that many respondents do not seem to have applied their mind while polling is evident from the fact that the answers appear inconsistent when correlated with different questions. For instance, 68% feel that candidates do not follow fair and ethical practices during elections. Only 55% feel that deserving candidates do not win elections. Does that mean that the remaining 13% of those polled believe that deserving candidates use unfair means?

We also noticed a few more inconsistencies. According to probability theories taught at IIT's Maths department, the number of students who answered with all winning answers should be $37\% \times 55\% \times 55\% \times 18\% \times$

50% X 54% X 68% X 49% X 47% X 57% which is equal to 0.05% of 321 i.e. NIL. In other words, no student is likely to have answered with all winning answers, probabilistically speaking. But we find 3 students who fit the bill i.e. almost 1% of the respondents. Hence, actual occurrences are 20 times that of probabilistic occurrences. This finding suggests that the questions are related to one another in a way. Student saying that rules and measures set in place by the gymkhana committee needs

68% feel that candidates do not follow fair and ethical practices during elections. Only 55% feel that deserving candidates do not win elections. Does that mean that the remaining 13% of those polled believe that deserving candidates use unfair means?



to be robust is not likely to say that reform is not necessary in the election committee while answering the other question. Yes, the inconsistency shown in the ethical practices question does exist, but this inconsistency is not uniform.

We went back to explore the answers to the 2 questions cited above viz. “Do you think the most deserving candidate always wins the election?” and “Generally, do you think that candidates follow fair and ethical practices at the time of elections?” No was the favourite answer to both questions. At 68% and 55% respectively. Now, how many are likely to have answered “No” to both questions. If the questions were totally unrelated, we should have had 68% X 55% i.e. 37% or 120 folks answering with a No in both cases. But we can clearly see that the questions are related and

we should have had either 68% (219 folks) or 55% (176 folks) answering No to both questions. As it turned out, 139 people answered No to both questions, suggesting a very minor relationship between the questions. Similarly, in other cases, we find that the relationship between questions does not get answers in proportion to our perception of the relationship. Neither does it get answers according to the probability theory applicable to unrelated questions. The actual answer hovers between these two extremes.

Maybe the respondents are not fully “wisened” and not fully “men-ed” yet. Or maybe they turned in a hurried assignment at the last minute, confident that this poll will not impair their grade in any way. Or maybe 93% want to say politely what 7% have said point-blank. “I don’t give a damn.” ❖



Neighbour's Call: A Story of Two Nations

VISHNU VARDHAN VINJAM

One can feel the wind warming up as the train cuts across the plains of Gujarat and forests of Dang to the salt pans and hillocks of Konkan. It was somewhere midway between both, where the view through the window becomes a visual boredom that Dhaman felt the need to open a book.

You see, travel and books are inseparable. Books make you want to travel and explore; and travel pulls you closer to books for its wisdom and knowledge. While the ever-changing landscapes and lack of repetition and familiarity in travel might be imposing, reading during travel provides a sense of continuity through its characters and groundedness through its story. Dhaman was silently purging through his new book, found in the rusty old streets of Dariyaganj in Chandni Chowk.

It was when the muscles inside his stomach started to growl that he realised he hadn't eaten anything since last night. While he was waiting for some vendor to pass by, three clean-shaven men with trimmed hair and dull green bottoms came in the compartment to occupy free seats. Their looks were distinctively army-like and their camouflaged backpacks and sleeping bags would further make it obvious. When a train hawker did arrive finally, they all ordered for the last pieces of *idli* left with him.

The fight last night was vivid and sadis-

Books make you want to travel and explore; and travel pulls you closer to books for its wisdom and knowledge.



tically comical. Dhaman was lying on the upper berth, browsing the initial few pages of the book in the light from the neighbouring compartment. Just below him, came a flash of a hand and on a bearded cheek it was landed. A fight broke out with loud shouting and distinct slaps on the face and the compartment in no time woke to this entertainment. Our villain misbehaved with a girl, touching her inappropriately and our hero, the girl's brother, was seeking vengeance.

It took time for every uninvolved witness to comprehend, but soon it was clear that the warring camps were both from the hero's fold. One group was seeking righteousness by further having a piece of the villain, while the other was asking for calm, but in a way that will wake those in the next compartment up. Our responsible, disciplined army-men then stepped in (though rather late) to calm the proceedings and settle the dispute. But being outsiders they were booed away by worried aunties who jumped in to the battle to protect their children who were hurling graphic abuses.

'You should drink water after eating,' the



"Illustration by Another Visual Diary by Joanna <https://anothervisualdiary.wordpress.com>

oldest among three suggested to Dhaman and even pulled a bottle from the junior and offered it to him. Dhaman could not think of anything and silently took a sip from it. He even dropped his plan to wash his hands and settled by cleaning with the plate itself. He was convinced that something unexpected is going to happen.

'So what is your caste?' the oldest asked in a south Indian Hindi accent.

Embarrassed as to what made this man ask his caste, he slyly replied that they wouldn't know the name, but said that their profession was agriculture.

'Does it mean you are not a Musalman?' he said with a surprised tone.

'What,' Dhaman shouted, but only in his mind.

'Can a Muslim not be a farmer?' again inside.

'Wait, don't Muslims have caste? NO!' again there.

'Do I look like a Muslim? My beard!' still inside.

'No. But why?' now aloud.

'See even those who are not Muslims read

such books,' the oldest instructed the other. 'It was you who said he was a Musalman right?' Imran Khan Pakistan was the book in Dhaman's hands and it said it all.

'Not me Sir', said the other guiltily, taking the blame of his senior.

He then turned to Dhaman and asked politely, 'then why are you reading this book?'

Though enraged inside he calmly said, 'just wanted to know about Imran Khan and do a quick history lesson on Pakistan.'

'Good. You should try for services then,' referring to civil services. 'Study well in Bangalore or Delhi and get into IAS' he suggested with an innocent fatherly tone.

He could not take it anymore and quickly said, 'Sure. I am actually thinking of doing that. Thanks a lot!' and jumped back into his book. He did not want to further embarrass the soldiers in his eyes, whom he had utmost respect for. After being left mid-way they scrambled to find a way out, which they eventually did by leaving to charge their mobile phones.

The anger inside him quickly found its solace in the military generals and self-serving



politicians of our disturbed neighbour. He did not care to see the strangers now occupying the left out seats.

Two women with their heads covered, in bright yellow sarees with red embroidery all across sat on the side lower berths. One of them had a child in her arms and was swinging her up and down, while the other was looking at the now clear Konkan mountains and coconut trees through the window. Looking at the men sitting beside Dhaman, you might think that they would mostly be from UP. But the women would make you settle at Rajasthan. For Dhaman it was simply, completely out of place.

Dhaman felt home, looking at the local trains buzzing besides the express. It just crossed Virar and the guy opposite him started jumping on his seat. He was definitely the youngest among them, but seemed too old for the kind of excitement he had by discovering locals. 'Look, Look,' he shouted to the women probably his sisters and the middle aged man beside Dhaman who looked like his uncle.

Dhaman could not contain his happiness at someone delighted at seeing the crowds hanging loose on the doors. 'Soo .. many people ...,' the young guy continued.

He asked the uncle if it's their first time to Mumbai to which he replied yes in a distinct

Rajasthani accent. 'We have come here for sight-seeing.' He pulled his legs up on the seat with knees facing upwards and continued, 'We are a big group of 30 people and are here for a week.'

Dhaman introduced himself as an engineering student in Mumbai, but originally from a city near Hyderabad. He informed them that as a part of his travel he was in Jodhpur and Jaisalmer for the last 3 days.

The uncle pulled out his Nokia Xpress

'Where exactly are you from?'

He looked to the side as though he was pointing his fingers to those sitting in the other compartment, 'Everyone is from Jodhpur, but we are not from there'



Music and asked 'Have you ever met Amitabh or Shabrukh?'

More than satisfied with Dhaman's embarrassed nodding of head he said, 'Not an issue. Not an issue at all. See,' he said showing some images in his phone, 'I met Akshay Kumar and Sonakshi,' in what looked like an Airport. He pointed to a man in checked shirt, far behind the crowd surrounding the stars, standing on his heels in an attempt to glance at the stars. 'This photo was taken by my brother,' he said proudly.

'This is amazing. Wonderful!' Dhaman replied.

'So, what do you do?' he asked with a new found interest in his neighbour.

'Me? I work in a factory,' the uncle replied laying bare his rough hands.

'Where exactly are you from?'

He looked to the side as though he was

pointing his fingers to those sitting in the other compartment, *'Everyone is from Jodhpur, but we are not from there.'*

'Oh. Then where are you from?'

'No. We are not from here,' he again repeated.

Confused, Dhaman changed the topic and spoke about places they could visit in Mumbai and asked about their plans for stay and touring. They shared a couple of personal experiences about Bombay and the uncle even told about the women whom he has a crush on and that she was uncomfortable with him being there.

This explains her almost child-like interest in the view outside the window. *'Not an issue at all. I will still sit here,'* he justified. Though Dhaman could not understand why the uncle kept mentioning that he was not from here, but never said anything about where he was from, he soon forgot about it. He later got back to his book.

The uncle inched closer and nudged Dhaman. He pointed his finger to the top of the page Dhaman was reading, *'What is this?'* he asked.

'What is he asking? Can he not read? Maybe he doesn't understand English.' Dhaman thought.

'Pakistan?' he said quizzically.

'Since you are very good and kind, I am telling this to you. Please do not tell this to anyone or else we all will be in trouble,' the uncle said in a calm, serious tone.

'Do not worry. I have no one to tell,' assuring.

'We are from Pakistan and I work in Hyderabad over there.'

Dhamaan did not know what to respond or even what to think. Should he ask how they are here? Or rather why they are here? Should he ask their religion? Should he wonder about the sinister plot he was pulled into?

Before he could proceed, the three army men came back to occupy their seats. ❖



Vishnu Vardhan Vinjam

Vishnu Vardhan Vinjam, senior undergraduate from Computer Science Department and a resident of Hostel - 4. With a passion for travel and dream of touring the world, this story is partly based on his solo travel across the northern states last December. He is founding Overall Coordinator of Abhyuday, IIT-B's very own social festival and dreams of seeing it to be a student movement across the nation towards youth leadership for social change.

To the Postmaster

TINKERBEE

*In the sealed envelopes of time,
I sent many a letter, application, song, or rhyme,
To addresses that I had only travelled in the space of my dreams
Or journeyed through in the depths of my mind.
Each time I added a postage stamp with hope embossed,
And put some glue of patience on the seams of the envelope,
I dreamt that the world would be mine,
That someday words of the heart would shine.
Each time the postmaster of my small town post office,
Assured me that the songs would get published,
That this letter would cast the spell,
That this time there will return a job, money,
and some love in the envelope as well.*

*In the sealed envelope of time,
I would wait for days, months, and years
For a response from nowhere,
For a leaf of assurance and an acceptance
Of my present, my now, and my here.
Each time I sent the letter to addresses in the cloud,
I would run back to the little temple at the bend of the gully,
And chat aloud, with the local Devi about gifts that I would give,
If I get a response, and that for every little rejection of hers, I shall
forgive.*

*Days and months passed away,
But neither an answer nor a word came my way.
The postmaster told me one day,
“Do not lose your heart, the foreigners and the big babus of the bigger
cities
Also have kindness at heart,
But forgive them, for they know not the small town ways.
They do not know how much you spent on the postage stamp.*



Source: Flickr, Andrea Joseph's illustrations

*They do not know how much it takes to wait and work under the street lamp.
Our little town is like a beautiful painting on the white-washed wall.
But paintings neither give you food to eat, nor will feed all.
Go away to the big city,
Songs and poetry do not feed empty hearts and hungry stomachs,
Work hard, earn, and do your duty”.*

*I left the little town for the big city.
The world was big and kind (they told me),
And I wanted to travel and enjoy its beauty.
Years passed,
The poetry and songs that I wrote,
Got lost in the same envelopes of time.
Being cynical was the new fashion,
I lived prose and breathed criticism with passion.
Long after, one day I came back to the small town.
The post office had a new, younger postmaster.
He met me with a nonchalant warmth, and handed me a sealed envelope.
The old postmaster had left me a stamped letter and a one rupee note,
Before he left the post office
And vanished into the dark corners of time.*

*As I tore open with trembling hands, the letter in the sealed envelope,
I found a hand written note with blots of leaking ink,
Smelling of old age and drafted with poverty's stink.
Etched on the letterhead of the local post office.
The postmaster wrote,
"You were looking for an acceptance which we could not give,
But here is a note of "yes" to everything that you ever wrote.
Let this letter help you to heal and to forgive.
I lived your hope and got disappointed with your disappointments,
But what could I do?
I was only a sarkari servant.
I could not publish your writings,
Nor could I give you a job or an appointment.
But, the sealed envelopes of time
Do not seal fates and do not snatch away efforts.
Someday you will remember the good that a few people meant for you,
And forgive what could not work and forgive the hurt that was given by
a few.
Life is too short to keep waiting for acceptances and admiration,
I bless you to get whatever you require and have determination.
But remember that whatever is desired is not always for the best,
You just add the glue and put the stamp and forget the rest."*

*I walked away with the letter in my hand,
Thinking there is so much to life that we hardly understand.
In the sealed envelopes of time,
That one acceptance brought some poetry back into life.*

(Dedicated to the dying art of letters and postal services in India and to the thousands of young people who still use these services in villages and small towns to send their job applications or scholarship applications or poetry/prose abroad, either to get rejected or never to be heard).



By Frits Ablefeldt

Let it Bee

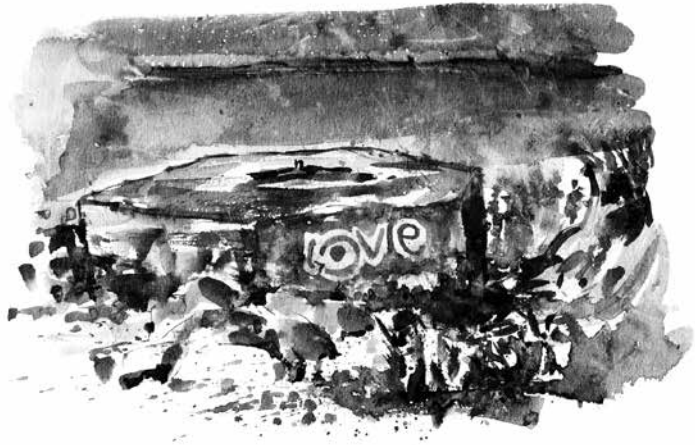
Tinkerbee

*Over the years,
And in the span across time circles and gyres,
We slowly realise and start to know,
How easy is everything else, but letting go.
We cling to memories and call them nostalgia,
While reality beckons us to rise from amnesia.
We keep holding on to the past,
Even when the dreams we weaved for a future are ours at last.*

*Over the years,
We gather that everything can be conquered, except fear.
We fear losing all that we have,
And run after an unknown crave.*

*Over the years,
We start growing up to understand that everything is simple,
Except that to forgive yourself is the toughest job of all.
We mull over errors and worry about mistakes,
Regretting the opportunities that came and then went,
Worrying over the unseen burden of expectations that were on stake.*

*Over the years,
There were so many things to be afraid of, to lose, or to regret,
That we kept calculating all that we lost and noted that which we could
not get.
We forgot to look around,
To feel light and to perceive sound.*



By Frits Ahlefeldt

*Over the years,
We forgot how it feels to touch the blades of damp grass,
To see the unfolding of nature's romance,
And to listen to the flight of squirrels or to hear the birds sing.
We forgot to count the ticks of the clock and perceive the gongs ring.
For, time was everything but worth our time.
Over the years,
Crushed by the mad rush to be,
I also forgot that it sometimes is alright to let it be.*

Tinker-bee

A new bee of the bee-town, Tinkerbee loves tinkering around with forms of writing and is in quest for new genres of creativity. An alumni of the batch of 2010 IIT Bombay (Department of Humanities and Social Sciences), the Tinker-bee researched on the theories of Mikhail Bakhtin and the fiction of Amitav Ghosh for her doctoral degree. She is currently working as Assistant Professor in Humanities at IIT Gandhinagar. The Tinker-bee has a passion to explore intersections between literature and philosophy, between theory and practice, and between life and creativity. She believes that a little compassion and some poetry in life can make the world a better place to live.

Ring The Bell For Change

DEEPAYAN BHADRA

In the light of the numerous incidents of brutality against women, every man, in the true sense of the term, must have felt an inner desire to do something about it. One might point out that heinous acts against the so-called ‘weaker’ sex have come all the more to the fore since the December 16th rape case in Delhi. However India, as one foreigner in a TV interview aptly put it, has been a sexually repressed country since time immemorial. In the land of the Kamasutra, the karma of men has truly gone haywire, so much so that women are having second thoughts about stepping out of their houses into the open street. As a writer friend of mine puts it, India is in dire need of a revolution.

Who is to blame really? Is it the judiciary that delivers verdicts at a snail’s pace? Or is it the media that takes sadistic pleasure in selling such news such that it starts becoming rampant and commonplace?

I have an older sister who is often complimented on her beauty. To be brutally frank, as a man it is understandable to take a second look at an attractive girl, but the thin line between looking and leering must never be trespassed. To counter incidents of rape, people have suggested solutions such as castration, whether chemical or not, death penalty and life imprisonment. Now, think logically. Isn’t it better that there is some direct correspondence between the crime and the subsequent punishment? Yes, indeed. Though the government is

yet to implement castration, it is the need of the hour. Make the bastards feel helpless and devoid them of all manliness.

I refuse to just think out of the box. I say, break the box. In many European countries like the Netherlands, France and Denmark, prostitution is legal. Make the entire system transparent. I am aware that those who are raising eyebrows at this suggestion will agree that paid sex is better than forced, unnatural

To be brutally frank, as a man it is understandable to take a second look at an attractive girl, but the thin line between looking and leering must never be trespassed



sex. That will at least stop the hungry dogs from pouncing on every available piece of ‘meat’. My heart grieves at the state of this nation. I feel ashamed to be a man. I can only hope to change my immediate circle. I can only make a genuine promise. ❖



Deepayan Bhadra

Deepayan Bhadra is a Masters student of aerospace engineering at IIT Bombay. For some years now, writing has been a way of life for him – a form of self-expression. He has been privileged to have some of his articles published in some newspapers and also the H7 magazine! He hopes that this article will strike a strong chord with the readers.

A Winter Morning

JAYANTA BORAH



Jayanta Madhab Borah

Jayanta Madhab Borah is passionate about art.

He is more into art than engineering. In his illustration he tries to capture the side of the human world that is often overlooked, and the internal world within each human that others do not see. Currently an M-Des student at IIT Kanpur.

When One Door Closes, Don't you Know, Another Opens?

AKSHAY JOSHI

**Here birdy is being taken in a feminine sense.*

Once upon a time there was a baby birdy, too ambitious and mature for her age, living in a small nest with her family which was her world. Her childhood turned out to be lovely. She used to wander alone and in her own world which she had all planned out. She was liked by everyone among her friends and at the same time was being feared by some because of her occasional mature weird behaviour. Nevertheless she learned to live and survived in this imaginary world of hers.

Now the time arrived for the birdy to fly out of the little nest and face the challenges of the real world. She quickly learned to fly and acquired all the skills needed to overcome the challenges she might have to face. The birdy set along her journeys with her marvellous feathers and shining skin and sailed far from the nest many times. She was loved and adored by everyone she met on the path. She knew the manners and the code to crack for people's happiness. She loved flying overseas.

One day, she met a boy named V. She adored him and his sense of humour. The boy liked the birdy's company as much as she enjoyed his. They used to fly along, play and eat together and talk all day long! It seemed to the birdy that V had been made to cross her path for herself. This was the first time that the birdy had opened up to anyone about her feelings, told anyone else about her world:

It seemed to the birdy that V had been made to cross her path for herself.



her real world. But, as it's said, you can't say to the spring: "Come now and last as long as possible." You can only say: "Come and bless me with your hope, and stay as long as you can." V left to achieve his ambitions leaving the heart of the birdy ruptured. She wept all day, couldn't sleep for countless nights, lost interest in flying, blaming God for what had happened to her. She took the wrath on herself, fled all across the seven seas and rested for long. After all God had planned something else, something better for her.

And in the next time, the birdy came again back to the real world. She lost all her faith in "love". She accepted the situation as it was and felt that she could never be loved nor would she be able to love anyone else. Scars take time to heal. She started to become sad at odd times. Her imaginary world made no sense to her now.

Not until she met a marvellous looking boy. His name was D. He understood her, took care of her, and talked to her all day. They used to make fun of each other when they met. He offered her his friendship so as to rush away her pain and suffering. She felt happy being with him. There was something magical between them. They sailed along

extreme pathways.

One day, the boy went on flying alone and found a bird that he loved a lot. He fled with that other bird leaving the birdy alone. The birdy felt very sad and spent all her time thinking about him. All the memories of V surfaced in her mind. She remembered the time she spent flying with D, V, all the good times spent together. She thought of the day when she met them for the first time, flying contentedly among the clouds.

She accepted the situation as it was and felt that she could never be loved nor would she be able to love anyone else

She accepted the situation as it was and felt that she could never be loved nor would she be able to love anyone else



She felt cheated, depressed and felt betrayed. But somewhere in the deepest of her heart she knew that it happened because of her and because of her sins. “The price to be paid.”

Someone asked the birdy:

“Would you go with D if he comes back to you so that you can fly with him once more across the sky”?

“If I had allowed myself to have gone with them at the first place, then they would have loved and admired me more; alas it’s their loss”. B-) ❖



Akshay Joshi

Akshay Joshi is a third year undergraduate student in the electrical engineering department. He has various interests ranging from literary work to sports. He is also an events core team manager at Student Alumni Relations Cell (SARC), IIT Bombay.

Ivory Tower Dreams to Reality

SUSHANTO MITRA

WITH INPUTS FROM PROF. C. AMARNATH & BIPIN KUMAR

If there is a single thing that IIT teaches you to do, it is to dream with your eyes wide open. So while I was leaving IIT after five years of being a part of SINE incubator it was a difficult moment in my life. Yes, from a career perspective it was a move for better position and compensation but somewhere deep inside me I felt I was leaving a place that was my home. A team of people who, despite our differences at times, were a part of the family that Prof. C. Amarnath, PI SINE (2006-12) called the SINE family.

As I walked out of my farewell party the thought that kept recurring in my head was that I was leaving home forever. Strangely, it was at that very moment that an idea struck me. How about an angel investing network for IITians by IITians that would bring me back to the campus many times over. At first, it was just an idea very much like the thousands of ideas eager students used to pitch to me at SINE, an aspiration rather than a viable business. There were already two major angel networks in India that were in existence for almost a decade now and almost everyone who wanted to be an angel had joined one of them. And further, unlike the students who pitched, I was in my late forties.

Funnily despite the audacity of the idea, it didn't die. As I moved into my new job, with every passing day the idea got stronger until the time I could not hold it any longer to myself.

As I walked out of my farewell party the thought that kept recurring in my head was that I was leaving home forever.



So as a next step, I spoke to one of the most successful seed stage venture capitalists in India who is notorious for shooting down ideas very bluntly. Strangely he liked it. That gave me some hope. So while I worked in my new assignment during the week, my weekend visits to Mumbai were busy meeting colleagues and friends to pitch my idea to them and again everyone seemed enthusiastic about it. Idea validated I thought – words which we often used to encourage the students at SINE.

But then it's not easy to leave the comfort of a fixed salary every month to start something new. So while I continued to nurse my dream and while most of the feedback was positive and I even had a rough business plan ready, I was too scared to take the final plunge. Months passed by and in some ways the idea sort of receded into the background as my work kept me busy.

While all this was going on, I suddenly got to travel to Eastern Europe where I met with angel investors from countries like Finland, Estonia, Latvia, and Norway. What surprised me was that even a country like Finland with a population of a mere 5.5 million had over

500 angels. By the same logic India should have almost a lakh angel investors and the best current estimate of angels in India is around 1000, that is just 1% of the potential. This is actually true about most things in India. This was also what finally changed my mind.

Then there was no looking back. I put in my papers soon after I returned. Coincidentally, one of the students who was earlier the Overall Co-ordinator of E-Cell at IITB, Bipin Kumar (2013), got in touch with me around the same time to say he was looking for a job in an angel network post-IIT because he wanted to continue the work he did at E-Cell. Bipin, Professor Amarnath, and I had worked together for Deferred Placement Program and spent a lot of time convincing students about it. I didn't immediately tell him about my audacious plans. Bit by bit I told him about the idea and he seemed interested and agreed to join. The team was there. So the day after I left my job in Hyderabad, I started working from a friend's office in Mumbai with just an idea and a two-member team and of course a name: Lead Angels appropriate I thought for IITians!

I then called Prof. Amarnath, who by then had retired from IITB, and told him about my idea. He said in his usual style of quiet composure, "That's great, please come over and discuss", just as he would tell students while he was at SINE however childish their idea. I took the next day's flight to Bangalore and soon I was sitting at his HRBR Layout flat discussing how an angel network focused on IITians could work because both its members and its investee companies would come from the same community. He liked the idea too and agreed to be our advisor.

Things happened very quickly from there and within three months of our start, we had our first meeting of angels in October of 2013 with 15 members, all of whom were successful entrepreneurs with the sole exception of one young IITian, Ankit Jain (2007), whom most

people would still mistake for being a student. With over 25 members into our second meeting and plans to open chapters in Delhi and Ahmedabad, it seems we are finally off the ground. What is interesting about the network apart from being an IIT team is also its focus on IIT students and alumni both as investee companies as well as investing members.

And of course, nowadays we all come to IIT once again to meet students and sometimes young alumni to listen to their ideas and dreams and in our new avatar meet them even across in Delhi and Bangalore almost the same way as we did at SINE and Ecell. While we have to be more practical about what would interest our angel investors and screen ideas with that in mind, our advice to young entrepreneurs will always be: no dream is silly enough to throw away, of course, if your eyes are wide open. ❖

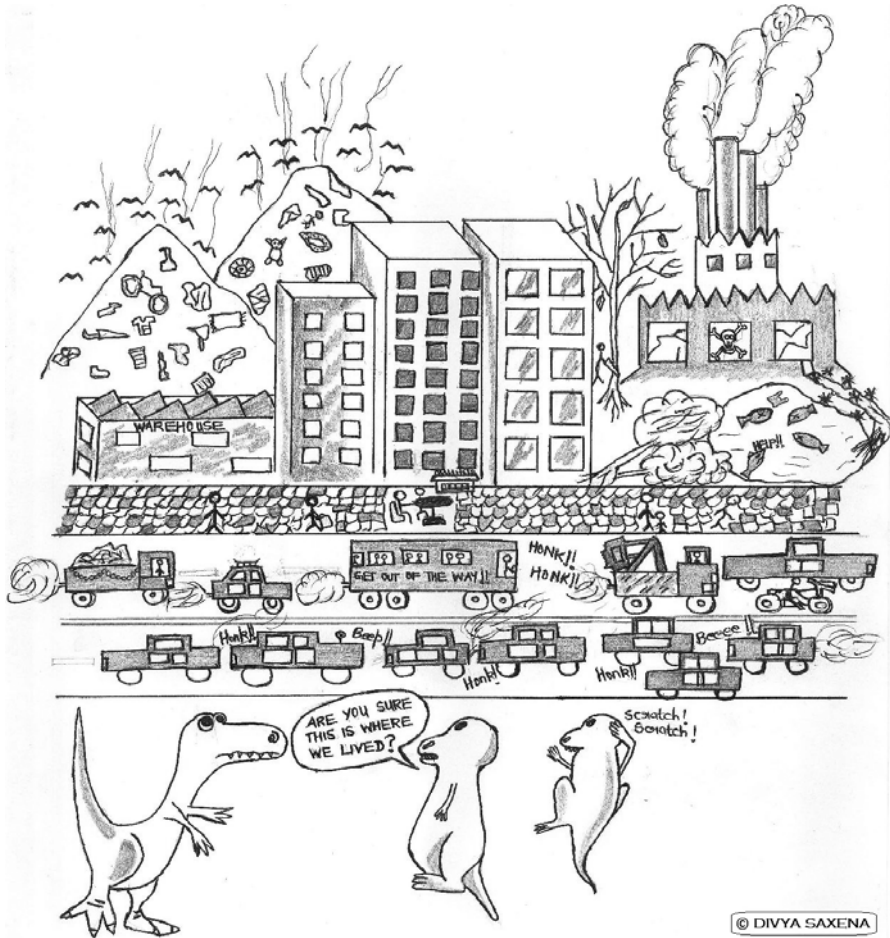


Sushanto Mitra

Sushanto Mitra is the Founder & CEO of Lead Angels, an angel network. It is the first angel network in India that has been founded by a team from IITB. Prior to this he was Director, Hyderabad Angels. He was earlier the first CEO of SINE-IITB from 2007-2012. SINE is one of India's largest and most successful technology incubators and was awarded the best TBI award in 2010.

Sushanto graduated from St. Stephen's College, Delhi and has worked in organisations including HCL Insys, PriceWaterhouse Coopers, and Softek before moving into the startup ecosystem in 1999.

Sushanto loves working with new ideas from entrepreneurs and the primary reason for setting up Lead Angels was to continue doing what he loves doing. He also likes playing chess and cooking whenever he gets the time.



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Divya Saxena



Divya Saxena is currently pursuing Ph.D. in the Department of Earth Sciences, IIT-Bombay. Prior to this, she graduated with a Master's degree in Geology from the University of Delhi. Although her research interests cover a wide range of topics, she is presently working on Paleoenvironmental/Paleoclimatic reconstructions utilizing micro-fossils of Foraminifera. Divya hails from New Delhi; she is a sports enthusiast and enjoys savoring a variety of food delicacies.

Performing Arts Festival

VAIBHAV SAMBRE

I was just a normal guy. I did not write poems/articles/stories back then. In the interest of my wing and the general public at large, I opted not to sing, dance or do dramatics very early in my first year.

Well then, why am I writing this article about PAF?

It all started in my first year when I voluntarily joined in to cut bamboos for seemingly no purpose at all. This seemingly pointless work was made enjoyable by the sheer enthusiasm of the freshies and seniors working with us. Every night there used to be a music system which played popular songs and people used to gather in the H3 footer field. The amount of *bakar* generated during those days used to be so damn much! Once in a while, the Hostel GSec used to pop up and we used to take up the monumental task of splitting a bamboo vertically into equal parts using basic gardening tools. The late night supplies of free *nimbu paani* from the canteen used to complete the scene.

Well, I can go on and on, but I would want all you freshies to get on ground and give it a try. Trust me “Prod” is one of the most enjoyable and satisfactory parts of PAF. Had I not worked on them back then, my IIT journey would not have been that memorable.

Back to the scene, we virtually recreated a lively airport scene with a working escalator and conveyor belts. We also had a two-tier set

In my third year, we were paired with H10. I have never seen so many people come to work for PAF!



up for the same. If I remember correctly, I was supposed to pull the rope so that escalator lifted the man standing on it. One senior came and said “*Baith jaa, tera pehla PAF hai, dekh and enjoy kar*”.

In another interesting anecdote, when there was no spotlight on the senior tier of our airport, it so happened that a freshie was caught there with two sophies. So till the time the focus returned on the second tier, the sophies “interacted” with the freshie. The guy just gave an intro in front of 2000 people. Gosh he must have been proud.

Our PAF “If Tomorrow Comes” came second. Archrivals H4 came first with “Arthur Road” which, I must say, is one of the best PAFs I have seen to date.

In my second year, I was the Prod and HR in-charge (yeah, we had an “HR” in-charge). So apart from doing all the prod stuff, I also had to guide all the freshies and create “enthu” among them. I couldn’t have been prouder.

We created a 20 feet tall revolving statue with Goddess Durga on one side and a Banyan tree on the other. A herculean effort was required to shift the statue from H3 to the



Celebration after Satrangi

OAT, with 27 people lifting the statue from H3 to SAC and twisting and tilting it until it finally went through the SAC gate. It was very heavy and back then we did not have tempos to transport the props. I cannot forget this scene ever.

Thanks to awesome direction, script and acting, our PAF “*Panchhi Re*” won the first position. However “*Antaragini*” stole the prod trophy by creating a working train on which they also had a choreographed dance. Respect to Hostel 8 for making such a thing possible.

In my third year, we were paired with H10. I have never seen so many people come to work for PAF!

I was the Prod in-charge again. Getting people to work was never a problem and even many of my batch mates came to work voluntarily (thank you, H10).

I have a lot of fond memories of this PAF, because this was the first time I was handling big things as our seniors refused to work because of some disputes. Due to my prod experience, I was made the Insti Bamboo in-charge and went with representatives of all the PAF teams to get bamboos from Mahim. The ride from Mahim to Powai sitting on bamboos loaded on a truck is something that I will

never forget.

One fine night in the OAT, three of us Prod in-charges got pricked in the feet by nails. We got tetanus injections from IITB Hospi at 12:30am. Priceless it was.

If you guys have seen the OAT stairs, you can understand our plight. We had built a semicircular boathouse there and the boathouse was projecting out of the OAT Stage with no support from the bottom. We thought it was just ornamental, but it was during the PAF that we realised that Mister Badri had a 20 min scene on the structure with jumping sequences. Such was the impact of jumps that even Niyati standing beside him jumped because of the vibrating structure. IIT Bombay Civil Engg had indeed taught my co-in-charge a few things. The structure did not break.

Our PAF “*Zoon - The last ray of hope*” came second. “*The Golden Quadrilateral*” featured a working elevator and came first. We won costumes and prod. Job well done!

My fourth year was the best PAF ever.

When we got a team of 13, 11 and 13, we hardly knew we would create history in “*Antbabar - the last drop of Spring*”. Adding to that the entire PAF was in vernacular. But what we did was phenomenal. Just a glimpse:



- We had sand art at the start. We had a puppet show, rope walking, men breathing fire...
- We had a working Ferris wheel built entirely by H3. We built it in parts and assembled it at the OAT. Mechanical Engineering at real work.
- We covered the entire OAT floor with sand to give a feel of the desert.
- We had an invisible border hidden in the stand which would pop up after a dance.
- We had awesome voiceovers, dance, music, drama sequences. I had never seen such dance forms and voiceovers for two actors in the same scene.

We won all 9 trophies.

Among things, building the Ferris wheel was a huge task. We had to make sure that it rotated and also was able to bear the weight of people. In the end we also lit it up with LEDs. Special thanks to H5 who allowed the structure to rest in the OAT even two days after our PAF was over. We were so tired that we couldn't carry it back.

While filling the OAT with sand, we realised that the sand was black. It was thirty minutes until the start of our PAF and the sand was black. We brought around 50kgs

of yellow *gulaal* and played *holi*. Festivals are good.

People were trained, in front of my eyes, to rope walk and they pulled it off successfully. IITians can do everything, can't they?

On a personal level, I missed out on prod due to my back surgery, but I did PFA, costumes and materials. Perhaps my most intriguing memory of this PAF will be when I carried the entire 60 kg bags of costumes from Virar to Andheri singlehanded. And yes, I danced a lot after we won.

En route to the PAF season, we were on a cornerstone at the Institute level and many meetings were held to discuss stuff, like bringing in labourers from outside for prod. The idea was revolting and fortunately was not implemented. A fantastic PAF season with "*Maun*, *Prime Minster*", "*Antbahar*" and "*Awaban*" rested all the doubts about the future of PAFs.

My fifth year was the senti PAF.

It was my last PAF – the culmination of all my experiences. Sadly for me, it did not go well. We came last in all the fields.

Among many things, I finally put the knowledge of chemistry to test as we planned to end our PAF "*Satrange*" with seven different



Zoon - 3rd year PAF

colour flames. I brought in all the chemicals but failed miserably to create the magic. A different sequence with seven different coloured cloths was planned hence, but was never executed.

I also had a trip to the police station during our stay at the OAT. Apparently the noise from the rehearsals was too loud. Fortunately I was let off.

Perhaps the funniest thing which I can recollect is the scene in which the actor was supposed to be hanged. Well, we had a hanging mechanism ready, but it broke during the scene. Our cool dude actor simply put himself in the hanging rope and hanged himself. Perhaps that was the thing even I would do out of embarrassment.

Nevertheless, the effort put in pulling this PAF was no way less than for the rest, and I am sure Team H3 will bounce back with its full vigour the next time.

I am presently writing this while sitting in my office cabin. All the memories are so fresh, raw and bouncing before my eyes. Perhaps PAF defined the way I was known during my five years and gave me memories and friends for the lifetime.

To all – PAF is something which you will

never be able to do once you are out of IITB, and remember that this is the thing which only IITB does among all the IITs. Don't miss this opportunity. Experience PAF in whichever way you can, and trust me — you will not regret it. ❖



Vaibhav Dhananjay Sambre

Vaibhav Dhananjay Sambre belongs to the 2008-2013 batch of MSc. (Int.) Chemistry and currently is stationed at Mumbai. Fondly called "Sambre-bro", he has been extremely active in all the hostel activities throughout his stay as student in H-3. He has been the mainstay of all the hostel PAF performances and has been source of enthusiasm for many hostel mates

The Incredible 'Condensed' One Hour

ATUL GUPTA



I like to write and over the years this interest has kept on growing mostly because of positive feedback from friends. However mostly the writing was restricted to technical papers. But an incident prompted me to write about

this extremely hilarious and fascinating story. Performing Arts Festival (PAF) is an inter-hostel competition at IIT Bombay, where a pair of hostels presents an hour-long skit. The paired hostels completely own the performance, right from script writing, to dramatization, sets, sound, lights, music, and publicity to attract people to come and watch the show. This story, a laughter riot, is about the PAF presented by H6 and H9 in 1991. With an amazing story line, some never before seen incredible special effects, amazing light and sound effects, great actors, musicians, and dancers, in short with an abundance of talent, Moonstone was headed for a definite victory. Did they succeed?

Following is a short reproduction of a chapter from the book where the teams are deciding the theme for their PAF. It is just the beginning.

Chapter 7 from the book

Our PAF Theme

The first and foremost task to get going with PAF is to identify the theme or the story and also identify the variety of talent that will be shown as part of PAF.

The mood was upbeat in both H6 and H9 as both hostels took pride in the immense talent at hand, and loads of talent is what you need to win a PAF. The core team from H6 and H9 met, shook hands, and settled in for the pre-PAF planning meeting in H9. Even before you could blink, the theme got finalized. For some reason there was an obsession with an alien theme; *alien to aana hi hai* (alien has to come) was something that the core team said and decided right away.

What alien? Why alien? From where will it come? These are questions that come to the minds of the uninitiated, but our core team stalwarts felt these were too trivial to answer and jumped to the more interesting aspects of PAF.

PK, from Industrial Design Center (IDC), the reputed design institute housed inside the IITB campus, put forth an incredible idea that shook everyone and moved them to the point of ecstasy. He said, "IDC has made a hovercraft! *Arey haan, Times of India ka reporter aaya tha* (Oh yes! The Times of India reporter had come) and it is in the advanced stage of development."

No alien has ever arrived on foot, right? So the idea was to have the alien arrive in the

Convocation Hall over the center aisle, in a hovercraft, and land on stage. PK continued his thought process as others dreamed about it, “*Public ke ooper se udte hue aaenge,*” (We will come flying over people’s heads) and others were like “*Wah wah*” (Great! Awesome!). PK was probably already flying in the hovercraft in his mind at that time. Few there in the meeting tried to plant the seed of disbelief, but PK was 100% convinced that this was possible.

Imagine yourself in this scenario. Won’t you be excited with this idea? Everyone there in the meeting was visibly excited about this possibility, “*If we can make this happen, what an opening it will give! No one can beat us then. Apna first aana to pakka hai!*” (Our coming first is guaranteed!) The human mind doesn’t need a hovercraft to fly, does it? However someone amongst them was more prudent and had his feet firmly on the ground. He asked, “OK, *Alien to aeyga, lekin phir kya hoga?*” (OK, Alien will come, but what will happen after that?)

There will be as many ideas as there are number of people and numerous innovative ideas were discussed. When you call for ideas you expect them to be aligned to the basic theme, but here, everyone was so excited that there were too many ideas but no semblance of any theme whatsoever. Finally after going back and forth, turning and tossing ideas, some story began to emerge:

- The opening scene will be a funeral with a dead body lying on the stage.
- The alien will arrive in the hovercraft and resurrect the dead body. If you are wondering why, don’t bother as no one there bothered about it either.
- The hero (the resurrected soul), as a bonus, will get a stone called Moonstone that will grant him any wish.
- The hero will try to do some good, but it will be misunderstood and he will be beaten up

- Later, the hero will become greedier and greedier, and keep asking for things only for personal gain.
- His ego and pride will inflate to such a level that he will think that it is he who has the powers and not the Moonstone and then he will destroy the stone in one of his fits.
- And then everything will collapse and he will just deteriorate from there on.

“*Wow! The theme is ready and is fantastic. We will definitely win this year’s PAF,*” everyone concluded.

With such a brilliant theme, there was ample scope to showcase the available talent. Remember PAF was all about showing talent: singing, dancing, acting, music, sets, props, lighting, direction, etc. You name it and it was all managed by the team. With the theme in place, the next obvious question was who will do what? Two brilliant and talented people, Siva from H6 and PK from H9, were de facto and unanimously chosen as directors as they had good credentials of doing something similar in earlier parts of their lives.

I will jump ahead a bit here. If you have been to similar shows, you would know that the director typically is on one side of stage managing things and prompting people as need be. He has to keep the show running and get it done as planned. You would immediately notice a flaw here. Here we had Siva and PK both taking directorial roles.

Left Director is one who parks on the left side of the stage issuing commands independently. In this case it was Siva. Right Director is one who parks on the right side of the stage issuing commands independently. In this case it was PK. Moonstone set a unique precedence in the history of dramatics by having two directors independently directing the proceedings live on stage.

Since PAF was a talent show, we needed more than just directors, and individual track

owners were selected. Let's quickly meet all of them since in the days to come, they will play a key role in the making of Moonstone.

- Mhow – The narrator of this epic story and the great bard from H6 who handled the music
- Chipalkatti – The hero of the PAF since he was supposed to be a great actor
- Rewa – Tall, lean, very fair person, and a certified comedian, was the alien
- Lulu – The hip mover from H6 was the Dance Director
- Lights-man – A guy from H9 who was given the task of handling the lights. (He requested that his name not be shared, so I will refer to him simply as the “lights-man” in this book.)
- PK – Right Director and the one who was going to handle the hovercraft
- Siva – Left Director
- Tandon - The brilliant engineer who was going to manage the sound effects
- MC – He was going to handle the overall production and coordination
- And then there were a bunch of folks handling props, costumes etc

When you are paired up for an event, there is tremendous team work and coordination required. However our directors thought otherwise. Back in 1991 itself they had realized the benefits of parallel execution. The preparation started in both hostels independent of each other; Siva along with some characters was spotted rehearsing in H6, while something similar was going on in H9.

What followed was days of planning and practice towards making a great PAF. At IIT, we typically had lectures in the morning and labs after lunch. Once the practice sessions started, people wanted to rush back to the hostel after labs so that they could start practicing. Some liked to skip labs and stay back after lunch (yes, we had lunch at our hostels itself) and some would even skip the morning

lectures. Slowly the PAF fever would build up and the entire hostel would get consumed in it. Those who weren't in the direct line of fire, i.e. not performing on stage, would eventually get picked up for doing the publicity or run some other errands, but everyone pretty much had some role to play.

There was limited time available at hand and so much to do. Let me take you to various locations where the preparations were on in full swing.

* * *

Conclusion

Like what you read so far? There is loads more action happening around this PAF and many more incidents that happened while I was at IIT Bombay. We all know, hostel life can be so much fun. Grab a copy of the book and I can almost take a bet that you will love it. You can order the physical printed book from here (<http://goo.gl/oiR2X2>) or buy the Kindle edition from here (<http://goo.gl/vZDrgu>). Do visit the Kindle page anyway to read the reviews on the book so far or check out the Facebook page (www.facebook.com/moonstone.book). ❖



Atul Gupta

Atul Gupta did his B.Tech in Chemical Engineering from IIT Bombay and belongs to the class of 1995. Since then he has been with Infosys Limited, working in various roles. He is currently settled in Pune with his wife and daughter. He is an avid writer but mostly in his official capacity; he has written many technical papers, 250+ technical blogs, and a book on ASP.NET 4 Social Networking (<http://www.packtpub.com/asp-net-4-social-networking/book>). He writes on miscellaneous topics on his personal blog (<http://atul-g.blogspot.in/>). You can connect with him on his twitter handle @g_atul.

Guilt

SUMEDHA SHYAM

*“It’s a girl,” they whispered,
Their voices full of shock and shame.
Today the child was.
Tomorrow SHE wasn’t.
FEMALE INFANTICIDE – We called it.*

*She was walking home all alone,
They fell upon her like a pack of dogs.
Physically battered and emotionally shattered,
Fighting between life and death SHE lay.
RAPE – We called it.*

*“Come with us, you’ll be helped,” they coaxed,
Their voices full of warmth and concern.
Selling her body was the only way she could live.
With dread and helplessness SHE woke to everyday.
SEX TRAFFICKING – We called it.*

*SHE spoke her mind denying their order,
They realised that their respect was at stake.
Making amends they ended her life.
An example was set that way.
HONOUR KILLING – We called it.*



*Illustration by Another Visual Diary by Joanna
<https://anothervisualdiary.wordpress.com/>*

*“Bring us more,” they commanded,
Their voices full of anger and hate.
After everything owned was ceded out,
SHE never saw another day.
DOWRY KILLING – We called it.*

*For ages have we borne this treatment be-
stowed,
Ruthless are they in rendering it out.
Weak are we for not fighting back.
Who is GUILTY – They or WE?*



Sumedha Shyam

*Sumedha Shyam is a
Chemical Engineering
Undergraduate (still 2 years to go). She is Lit
enthusiast who is especially interested in the
fiction genre. Trained in Classical Music she
uses writing as an expression for deeply felt
feelings. Still an amateur.*

The Mistakes that Entrepreneurs can Avoid

RUYINTAN MEHTA

I came to the US in 1970 as a graduate student after earning my Bachelor's degree in Chemical Engineering from IITB. I went on to get my Master's degree in Chemical Engineering at the University of Connecticut. Following that, I worked toward a PhD in Material Science and Engineering at the University of Utah, but I did not complete it; instead I got a Master's degree in Engineering Administration.

After finishing my formal education, I worked in several engineering jobs with increasing managerial and executive responsibilities. I left my cushy corporate job as the urge to do something on my own was overwhelming. Moreover I loved the Clean Water area and wanted to apply some of my past knowledge on engineering grade plastics.

Crystal Clear Incorporated & Crystal Clear Container Corporation

In 1990, with the intent of pursuing my entrepreneurial ambitions, I started Crystal Clear Inc in Hillside, New Jersey, a plastic blow molding company which manufactured large returnable water bottles. The only obvious benefit that our company seemed to have was a unique, patented bottle design: a hexagonal bottle with a round top and bottom. This shape could be used to full advantage when filling a 40 feet sea shipping container. The bottle's honeycomb-like stacking ability allowed us to export 19% more product. As a result, the company developed significant

My partner was 25 years older than me and there was a mismatch in our personalities. While he was not interested in taking at risks, I was very growth oriented. We had a 50-50 joint venture which I discovered does not work in most cases. Someone has to have majority control in order to have the authority to make decisions.



international business. It was our incomplete marketing plan and flawed financial analysis that stopped us from becoming a massive success in the local area. The unique bottle design attracted the attention of one of the largest resellers of water bottles in California, with that company ordering multiple container loads of bottles per week.

After shipping bottles by rail piggyback from New Jersey to Modesto, California for over a year, my customer in Modesto became my partner. His company made pure water machines and sold water and bottles at grocery stores. We entered into a 50:50 joint venture in California and named the company Crystal Clear Container Corporation. My

partner was 25 years older than me and there was a mismatch in our personalities. While he was not interested in taking risks, I was very growth oriented. After a short period in time, I came to a painful conclusion that a 50-50 joint venture does not work in most cases. Someone has to have majority control in order to have the authority to make decisions.

Lesson No 1: Ensure that someone in the partnership has majority control to have the authority to make decisions

The final conflict that led to the dissolution of our California partnership was when a new investment was needed to expand further. It was a bank loan with personal guarantees, and therefore a huge risk. In order to implement the expansion plans, I bought my partner out by paying for the real estate he had contributed to business.

Our unique hexagonal bottle design attracted the attention of one of the largest bottlers in South America. In 1995, we secured a huge contract from Coca Cola of Colombia, South America. This enabled the Crystal Clear companies to become a serious “threat” to the world’s largest manufacturer of PC returnable bottles – Reid Plastics Inc. At that time, Reid was a \$40 million privately owned company with multiple plants in the US, Mexico, Canada and Israel. Reid was expanding rapidly due to cash infusion from a private equity group and made us an offer that we could not refuse. Both Crystal Clear companies in New Jersey and California merged with Reid in June 1995 – 1/3 in cash, 1/3 in preferred stock with an 8% payment-in-kind (PIK) dividend and 3.5% equity ownership in Reid stock. From 1995 to 1997, we grew Reid from \$40 million to \$220 million in sales through six acquisitions.

I observed three common mistakes made by owners when approached by a seller. I too made all of them.

Lesson No 2: Almost everyone that Reid acquired did not have a competing offer. Inherently, the seller pays less.

Lesson No 3: Owners are almost unprepared for the exhaustive due diligence process conducted by a savvy acquirer. This invariably forces the seller to take a significant “haircut” in the sale price.

Lesson No 4: Sellers must understand the deal structure – Asset vs. Stock Deal

After integrating our acquisitions at Reid, we sold the company to a much larger private equity group at a huge EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortisation) multiple.

Plastic Industries Incorporated

In 1998, after selling Reid and upon termination of my employment contract with Reid’s new owner, I teamed up with a new, like-minded partner. Together we purchased Plastic Industries Inc, a small barely-profitable blow molder in California, for \$4 million.

Based on past mistakes we did not want to have a 50-50 partnership. So I readily agreed to let my operating partner have 50.1% to my 49.9%.

Canam Plastics Incorporated

Six months after the acquisition of Plastics Industries Inc, we had the opportunity to start from scratch a blow molding company in Ontario, Canada. The reason for this was the weak Canadian dollar, which at CAD1.40 per USD1.00 gave us a big advantage over US molders. We started Canam Plastics as a wholly owned subsidiary of Plastic Industries Inc.

Canam was the lowest cost manufacturer of blow molded watering cans in the northeast and midwest. Based on our cost advantage, we secured a 3 year “take or pay” contract with a large distributor of watering cans in NJ contracted to supply WalMart.

After 18 months of operation, Canam’s operating management approached us and, with an outside investor, offered us a very attractive buyout package for Canam Plastics. We decided to accept the offer from the Canadians. The profit from the sale was over

US\$1.8 million.

Unfortunately we failed to recognise that Canadian tax authorities treat Canadian subsidiaries of US-based businesses with a jaundiced eye. We had great US tax and legal advisors, but did not have good Canadian tax lawyers.

Canada impounded 30% of sale proceeds for well over year. In hindsight we should have had proper Canadian tax advisors.

Lesson No 5: Know the local rules intimately and seek local assistance.

Premium Molding Incorporated ----- The Biggest Mistake of my Professional Career

In 2001, I still owned Plastics Industries and it was running well without my day-to-day involvement. Somewhat bored I looked to acquire a company in northwestern Pennsylvania or New Jersey. I invested \$5.3 million for a 53% equity interest and the remaining 47% continued to be owned by the founder of the company, a man 14 years younger than me. However the acquisition of Premium Molding Inc was the biggest mistake of my professional career. This is because I had only conducted financial and marketing / customer due diligence at the time of purchase. I should have checked my partner's background and personality. I also hadn't conducted any investigation as to why the Worker Compensation insurance rates at Premium Molding were so sky high – a function of the workforce ethic and management approach towards its employees.

Lesson No 6: Ensure that you do a complete due diligence of all aspects of the business and key personnel

These avoidable mistakes cost me dearly later, when in July 2006 the accidental discovery of my junior partner's involvement in sexual harassment forced him to resign causing severe impact on business operations. In addition to this, the deep recession in Q4 2008 hit like a ton of bricks. Sales had shrunk by over 30% almost overnight.

I learnt many lessons from my experience here.

Lesson No 7: It is extremely important the character of your business partner is extremely important.

Lesson No 8: Workforce culture in a manufacturing environment is critical. It is essential to be familiar with a target company's culture and local conditions.

Growth without profits is meaningless. In the US, owning your own manufacturing

The profit from sale was over US\$1.8 million. Unfortunately we failed to recognise that Canadian tax authorities treat Canadian subsidiaries of US-based businesses with a jaundiced eye. We had great US tax and legal advisors, but did not have good Canadian tax lawyers. Canada impounded 30% of sale proceeds for well over year. In hindsight we should have had proper Canadian tax advisors.



facility real estate is a big mistake.

Lesson No 9: Lease but do not own real estate.

Lesson No 10: Reasonable risks are OK, but excessive leverage is harmful.

In late 2010, we sold Premium Molding to a private equity group at a huge loss.

Plastic Industries Incorporated --- The Ultimate Payoff

At Plastic Industries, which I consider to be my biggest business success, sales grew from \$4 million to almost \$33 million in 14

years. In late 2011 we became motivated to sell due to the health issues of my partner. In March 2012, we sold the company for \$33 million in an all stock deal with no earn out or seller note. Based on an almost 50:50 ownership, our \$250,000 original investment netted us about \$15.5 million each before taxes, or approximately 6200% over 14 years To put it in simpler terms about a 442% annual return.

9 Mistakes To Avoid That I Learned From Buying & Selling Companies

1. Exit Planning – Once you decide to sell, begin proactively planning your exit
2. Financial Records Audit – Audited or Reviewed
3. CAPEX – At exit, minimize Capital Expenditures in the final two years
4. Estate Tax Plan – Develop a well thought out estate tax plan
5. Due Diligence – Settle your family and business affairs by completing a “mock” seller due diligence process. Get rid of unproductive family members
6. Timing – Timing is everything. Plan in advance
7. All-Stock Sale – Strive for an all-stock sale
8. Post-Sale Financing – Limit your post sale financing structure
9. Advisory Team – Build a great advisory team of CPAs, lawyers and tax advisors and include a local expert. ❖



Ruyintan Mehta

Ruyintan Mehta (B Tech. Chemical Engineering)

C'1970 started, bought & sold six different blow molding companies across the U.S over 23 years. He is a Licensed Professional Chemical Engineer with a B Tech in ChE from Indian Institute of Technology Bombay 1970, a MS in ChE from U. of Connecticut 1972, and MEA in Engr. Admin. from U. of Utah 1974. He is now committed to “giving back” full time to non profits

My Thunder

ANURA KENKRE

*There is just darkness everywhere
As far as I can stare
To whom should I turn
the one who can return me back my world.
people do whatever they want
yet I am always expected to be up to the mark
i feel like I am caught in a web
of which some things I can never forget
i wish they could just let me be
and help me find some way in which I can set myself free
what is right and who is to decide
i wish there was some place I could just go and hide
where only I am alone with myself
far away from this world filled with mess
yet again I ask myself, to whom should I turn
the one who can return me back my world.
If only this question got an answer
i would be able to catch that something which stole my thunder.*



Anura Kenkre

Anura Kenkre is a third Year Research Scholar in the Department of Educational Technology. Her masters is in Physics with a specialization in Electronics and Telecommunication. She has also worked as a Research Assistant at the Indian Institute of Technology, Bombay, for the project “OSCAR for Physics Higher Education” for a period of one year. Apart

from this, she has worked as a reviewer for the International Conference on Technology for Education, 2012. Lastly, other than academic activities, her hobbies and participation in extra-curricular activities includes creative and technical writing, photography and music.

Unspoken

APURV MITTAL

We were standing at the doors of the local train at CST. She held the bar with both her hands, inside the train. I was on the platform, with my hands in my pockets.

She was talking about random things. But I was lost in the river of my own thoughts. The past few days were filled with ecstasy and amazing experiences, and I was still soaked in them.

I looked at the clock on the station. It said 10:47 and my heart raced to stop the time. The train was scheduled to depart at 10:48, but I didn't want her to leave. I wanted her to stay. I looked at her only to find that she was looking at me with a wide smile on her face. She had stopped talking. She was probably waiting for me to talk now.

But before I could say anything, the train moved. It moved without warning, without hint. I flinched involuntarily, but that was quickly replaced by my pressed lips trying to beam a smile. I could not look into her eyes for long because I was afraid that my eyes might tell the truth and, hence, I looked away and retreated.

But within three steps, I turned around. She was still standing near the doors of her compartment, looking out at me with amazement, perhaps wondering why I turned away. And as the train pulled out of the station, I stood there- letting time take her away.

Life is too short to leave anything that you want unspoken and undone.



*Frits Ablefeldt available
at [http://www.hiking-
artist.net/](http://www.hiking-artist.net/)*

While I Walk

APURV MITTAL

*I accept.
I have been heartbroken.
I can feel that awkwardness, that detachment.
And it's not easy. Not at all.
Because it's still raining here.
And I am getting all drenched.
It's difficult for me to look ahead and walk.
The road has been very slippery.
And I fall. Almost every day.
But I am trying. Slowly. Taking smaller steps than before.
Keeping my head straight and eyes set far ahead.
Somehow shielding the memories,
I am trying not to look back
While I walk.*



Apurv Mittal

Apurv Mittal is pursuing his Masters in Micro-electronics at the Department of Electrical Engineering, IIT Bombay. He likes to write his heart out about everything that affects him deeply. He feels strongly about making this world a better place to live in. Apart from writing, he enjoys cycling, travelling and is a fan of classical music.

Love you Daddy

AKANKSHA MANGHRANI

*Looking back, I can't stop wondering,
Was this the life you were leading me to,
When questions that need to be asked,
Seem to have been vanquished, crushed
by The Great Power that watches over us ...
When the quest for answers leaves me
only dead in fear...
When tears hold back on themselves,
Your silken touch not being there...
When saying "love you daddy" and being
tugged tight in your arms, would just remain
as possible as drinking the water of the mirage...
Was so much love meant to be your substitute
for an entire lifetime?*

*Did all those sleepless nights, mean
that I needed to take in hand the anchor
of my life?
Were all those rebukes, meant for you to
slowly ebb away?
Yes, of course they were all meant to be...
Me being too naive to anticipate that
divinity could not walk with sinners like me
for too long...*

PS: this is for all those who fail to remember the last time they had hugged their fathers tight and felt that warmth of love... Many just do not care because they fail to realise that there are some who have been deprived of this love forever...



Akanksha Manghrani

Akanksha Manghrani is an undergraduate first year student in the department of Chemistry and a resident of Hostel-15. She takes keen interest in her major. Her non-academic pursuits include reading, writing poetry and dancing.

National Solar Thermal Power Plant, IITB, The project and beyond

YOGESH INDOLIA

Today, the world is full of buzzwords—Green technology, Paradigm Shift, Sustainability, Globalization are some which everyone is giving ears to. Energy Crisis is one such and, unlike other words, seems inevitable if we keep using our fossil fuels at an ever increasing rate as we are doing now. All of us, literally, know how badly we need a shift of technology for energy production. Without getting into the associated ill-effects (Better expressed in Q1, 2013 article “Economy, Ecology and Non-violence” by Sudheendra Kulkarni, or by the whole issue in general [1]) these conventional ways impart on Nature (better expressed in Q1, 2013 article “Economy, Ecology and Non-violence” by Sudheendra Kulkarni, or by the whole issue in general [1]), let’s start with where we have reached with all wisdom and willingness to save Mother Nature.

By the late 19th century, the world had started to realize that our fossil fuel resources are limited, and it does not take a genius to infer that the supply is going to end eventually [2]. Over the time, more and more resources and time has been put in oil exploration even at the most inhospitable places. This is to satisfy the ever increasing demand for energy in this fast-changing technological world. This doesn’t mean we humans are all dumb and useless; we have done considerable research and developments for producing energy by various, alternative and available, sources

commonly included in the phrase Renewable Resources of Energy. Renewable resources of energy do not necessarily mean good to nature, some of them may have long term ramifications. Hydro-power, for instance, have some strong impacts on the environment, wildlife, and nature in the long run.

If a survey was done and a simple question was asked that which source of energy reaches literally each and every place on mother earth and still is wasted all the time, as we aren’t able to harness it, the answer will be without a doubt: Solar Energy. Insolation is a measure of total amount of solar radiation received on a given surface area in a given time. In fact, India lies in the area with high Insolation (latitude 40°N to 40°S), has a large population and a high population density, which makes solar power an ideal investment for electricity generation.

Now, let’s browse some statistics.

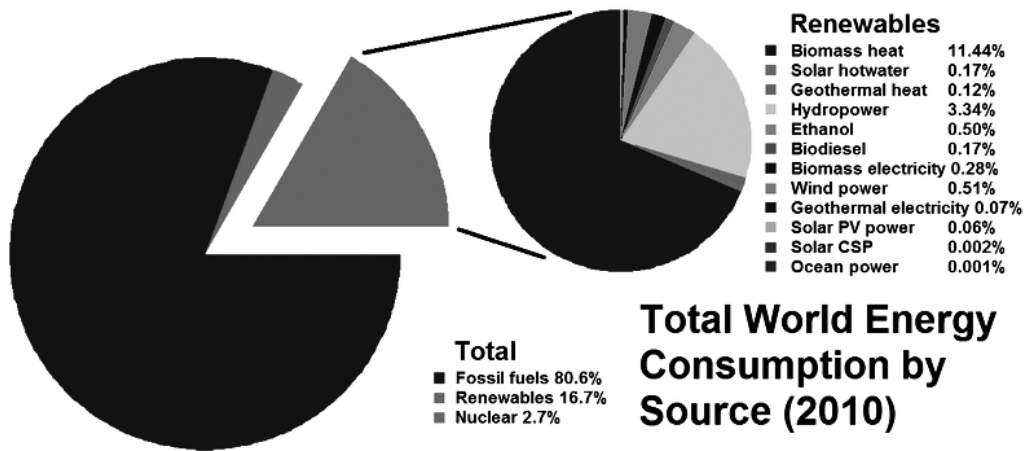


Fig 1: Energy usage by technology, Wikipedia[2]

From the pie chart in Fig 1, we can see that Solar hot water, Solar PV power and Condensed Solar Power (CSP) together contribute a mere 0.23 % of the total energy consumption worldwide [2]. Of this, 0.17% is coming from solar hot-water, which primarily is used by households and industries to generate hot water for various purposes, none of which involves producing power. This makes solar hot-water, a form, useful in very limited way.

However, the other two, namely Solar Photovoltaic (PV) power and Concentrated Solar Power (CSP), are used to generate electricity and hence more useful. These two are the only two technologies commercialized for solar power, contribute a mere 0.062% of our energy supply (in 2010), which is extremely low when compared to so much solar energy buzz around the globe. If only power generation is considered, solar power generation contributes to only 0.41% as of 2012, which is still a small fraction of what it could provide [3].

India, being a fast growing economy, has installed PV plants of around 2000 MW capacity of power generation [4]. Not only this, we have the largest solar field in Asia, the Charanka Solar park, Gujrat, and it is also among the frontrunners of PV installed capacities in the year 2013. Adding to it, the Ministry

of New & Renewable Energy (MNRE) has funded various projects for R&D work in PV at various institutions. At IIT Bombay, a National Centre for Photovoltaic Research and Education (NCPRE) was set up with a long term vision of self-sufficiency in solar technology [5].

Conclusively, in India, PV research and the industry is flourishing and is promising. But should we stop here? Shouldn't we look for more technologies or at least take ahead the available ones, like the CSP—the only other technology which has been commercialized and used for power generation around the world.

Concentrated Solar Power, sometimes also called Concentrated Solar Thermal Power, uses arrays of mirrors or lenses to concentrate sunrays falling on a large area to a point where it is transferred either directly to water to produce steam or by means of a transfer fluid (usually an oil) that is used to produce steam. This steam is fed to a conventional steam turbine engine to produce electricity that is fed to the grid (Fig 2).

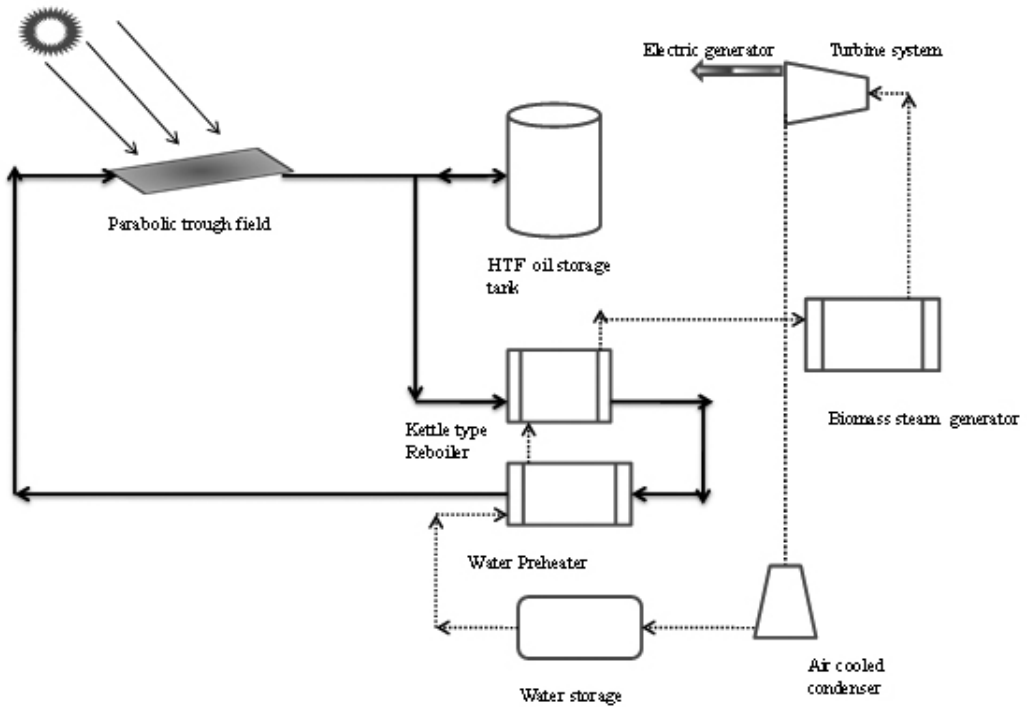


Fig 2: Schematic of a CSP Plant

CSP has already attracted attention in USA and Spain. It is quickly gaining in the Middle-East and North-African countries that have a large part of their lands as desert and are primarily among the very hot inhabited geographies in world.

In India, cost of installation (real & estimated) of some types of power plant is presented in the table below.

POWER GENERATION TECHNOLOGY	COST PER MW OF ELECTRICITY (INR)
Conventional Coal	4-5 Crores
Photovoltaic solar power (PV)	7-8 Crores [6]
Concentrated Solar Power (CSP)	15 Crores [7]

As is evident from the figures, Coal based thermal power plants are still the cheapest to produce electricity. PV Solar Power isn't much behind and this is one of the reasons for many large scale investments from both the government and the industry in PV.

But CSP seems to be a not-so-profitable investment for any organization. Let's come back to the PV solar power again. The cost of silicon solar cells have fallen from \$76.67 / Watt to \$0.74 /Watt. Cost of producing solar power in 2011 has come down to 60% of what it was in 2008, according to Bloomberg New Energy Finance estimates [8], making it for the first time competitive with the retail price of power in sunny countries. Moreover, similar to the famous Moore's Law, Swanson's Law predicts that the solar cell module prices reduce by 20% for every doubling of cumulative shipped volume [9].

Now the question arises: Can the cost of



The Site at Gwalpahari, Haryana in Solar Energy Center

installing CSP plants reduce? Presently much of the equipments, parts and expertise have to be procured from other countries for installing a CSP plant, but once industry starts making all the parts indigenously, costs will surely come down. It is just a matter of time. To achieve it we have to encourage research with strong focus on industrial aspects to develop support infrastructure like designing, testing and develop necessary skills to install, operate, and maintain a CSP plant.

With a long term vision for the industry, IIT Bombay took the initiative for installing and commissioning of a 1 MW CSP Plant and developed capabilities of designing and testing the technology, which is available for the industry to grasp and flourish. The foundation was laid on April 28, 2008 with support from MNRE, during the *National Workshop on Solar Thermal Power Generation*, for a pilot project Broadly, the project envisaged

1. Establishing a 1 MWe Grid-interactive national research facility on solar thermal power.



Dr. Farooq Abdullah, Hon. Minister, MNRE laying the foundation stone.

Over the time, more and more resources and time has been put in oil exploration even at the most inhospitable places.



2. Establishing a test facility for component and system characterisation.

Development of a simulation facility for designing and future scale-up of plant capacity. To implement the project, a consortium of industry, government and academic institution, led by IIT Bombay was set up. Annexure I lists the members of the consortium. An MOU was signed between all the members, and on January 10, 2010, the foundation stone was laid by Dr. Farooq Abdullah, Hon. Minister, MNRE .

Four years later, surmounting numerous challenges, the turbine was successfully made functional on 21st June 2013. Grid synchronization was achieved in March 2014 and the project is now complete. Currently minor O&M issues are being addressed and the control of the plant is being transferred to MNRE.



Parabolic Trough Field and the steam generation in the power plant

A brief description about the project:

The solar fields primarily consist of Parabolic Troughs and Compact Linear Fresnel Reflectors. A Testing facility was designed, fabricated, installed and commissioned to test the thermal performance of solar collectors. The Arun Dish, an indigenous technology developed by Clique Developments Pvt. Ltd, is being evaluated with the test rig.

The simulator, first released in July 2011, was downloaded in 150 Institutions, 230 Industries and other organizations across 24 countries. The software allows simulation of a complete plant or a user defined small subset of the plant in quasi-steady state.

Indeed, it is an achievement for IIT Bombay and all others involved. As a result, there has been some investment in this technology in India. Some of the plants already operational or under construction are listed in the table on the opposite page.

CSP provides some advantages over solar PV {

3. CSP has a high efficiency. It is not only evident from the design of both technologies, but also from the fact that asq. km. of PV installation gives 20-25 MW [11, 12] capacity whereas a sq. km. of a CSP plant



Test Rig constructed at site and the testing setup inside (inset).

Insolation is a measure of total amount of solar radiation received on a given surface area in a given time.



generates around 100 MW of electricity [13].

The Steam turbine system in CSP plants is similar to those in plants using fossil fuels or nuclear energy. CSP plants can utilise the work-force skilled in other power plants and personnel trained in CSP plants have the advantage of being employable in other power plants.

The intent in the above CSP vs. PV comparison, or any other comparison, is not to suppress PV and other technologies in any way. It is to draw attention to a promising technology, which, if given its due attention, will emerge to be a technology that will co-exist with other technologies and help humanity (also India) attain energy sustainability early. And Yes! We are in a hurry. ❖



Professors and the Project Team involved with the project.

Sr. No.	NAME OF THE PLANT	CSP TECHNOLOGY	OWNER OF PLANT	STATUS OF OPERATION
1	ACME Solar Tower, Bikaner Rajasthan	POWER TOWER	ACME Group.	OPERATIONAL
2	Godawari Solar Project, Nokh, Rajasthan	PARABOLIC TROUGH	Godawari Green Energy Limited	OPERATIONAL
3	Megha Solar Plant, Anantpur, AP	PARABOLIC TROUGH	Megha Engineering and Infrastructure	UNDER CONSTRUCTION
4	Gujrat Solar One, Kutch, Gujrat	PARABOLIC TROUGH	Cargo Solar Power	UNDER CONSTRUCTION
5	KVK Energy Solar Project, Askandra, Rajasthan	PARABOLIC TROUGH	KVK Energy Ventures Ltd	UNDER CONSTRUCTION
6	Dhursar Solar Power, Dhursar, Rajasthan	LINEAR FRESNAL REFLECTOR	Reliance Power	UNDER CONSTRUCTION
7	Diwakar Solar Power, Askandra, Rajasthan	PARABOLIC TROUGH	Lanco Infratech	UNDER CONSTRUCTION
8	Abhijeet Solar Project, Jaisalmer, Rajasthan	PARABOLIC TROUGH	Corporate Ispat Alloys Ltd.	UNDER CONSTRUCTION

Annexure I

1. Faculty Members involved with the project
 - Prof. J.K.Nayak, Energy Science and Engineering, Principal Investigator (PI)
 - Prof. R.Banerjee, Energy Science and Engineering, Co-PI
 - Prof. S.Bandyopadhyay, Energy Science and Engineering, Co-PI
 - Prof. S.B.Kedare, Energy Science and Engineering, IIT Bombay, Co-PI

4. Consortium Members

- IIT Bombay (Leader); Solar Energy Centre; Clique Developments Ltd.; KIE Solartherm; Larsen & Toubro; Tata Consulting Engineers (TCE); TATA Power
- Power Plant & Testing Rig Team
 - Rajkumar Nehra (Project Manager); Deepak Yadav; Kalpesh karnik; NGR Karthek; Tejas Shinde; Satish Kumar; Pankaj Nagarkar; Devendra Prasad; Sudarshan Paul; Samrat Maji.
 - Simulator Team
 - Nisith Desai; Lochana S. Dhawale.

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Yogesh Singh Indolia

Yogesh Singh Indolia, C-09, Meta, IITB; started his career in a startup for making UI’s and quickly moved to the civil engineering sector. He is inspired by technology and arts with equal drive. Presently he is developing the idea of “Structural Health Monitoring” for civil infrastructures. In his free time he’s entangled with music, travel, theatre, mathematics, fractals and everything else that makes the world beautiful.

Vagaskar, the Basketballer, Passes More Milestones

YUSUF BIVIJI

Anil Vagaskar's 29 baskets in the fifth round of basketball of the India-Wandys championship rounds is his 19th vicenary (vicenary, for the uninitiated, is a score of 20 baskets by an individual player in the game of basketball); the tenth in 14 rounds against the Wandys, and his first at the Gotala Stadium, Delhi.

In only two previous appearances in Delhi, both against Vilayat, Vagaskar made 12 and 8 baskets in 1972-73 and 8 and 17 in 1976-77. Earlier, at Calcutta's Paradise Stadium, with scores of 27 and 46 baskets, he became the first basketball player in history to achieve the distinction of a vicenary in each half time of a round, thrice. The Prime Minister has already sent his heartiest congratulations to Vagaskar on his establishing this world record.

In the third round at the Paradise Stadium, he scored more than 12 baskets needed to become the first from Asia to make more than 1,000 baskets in the championship rounds. And when he converted a jump shot from top of the circle to score 24th basket, he became the only shooter other than the dour Vilayati, Ban Bariton, to make more than 250 baskets twice in a calendar year.

Vagaskar's vicenary on Wednesday is the 14th for India at the Gotala Stadium. Fifteen vicenaries have been scored against India at the same venue.

As though these were mere fleabites, the hungry, dribbling wonder devoured even

It came as a pleasant surprise to his fans when he showed that he had added marksmanship to his all-round game.



the fabulous G. S. Topsy's aggregate for the India-Wandys championship rounds. Topsy's 480 in 18 rounds and 30 half-times looked small when Vagaskar reached his 19th basket in only 15 rounds.

And, for good measure, he also tumbled a home record. Ajay Ketkar's 146 against Vilayat in 1961-62 is the poorer now, for Vagaskar is already 153 in only four rounds- and is still going strong.

Already, this is Vagaskar's tournament. It came as a pleasant surprise to his fans when he showed that he had added marksmanship to his all-round game. Thanks to his clever passing, quick dribbling and his two vicenary stands, India, with 66 at half-time, was in an unassailable position. His speed and agility could have been credit even to Von Drabman.

Vagaskar's fourth vicenary in the current rounds has taken his total to 153. He has, thus, become the first Indian to aggregate over 150 baskets in championship rounds twice. He is now in hot pursuit of his career best of 193 against the Yankees in 1971.

Only seven other basketball players in the



Illustration courtesy - "Illustration by Irfana Biviji

world have scored over 150 baskets in championship rounds twice or more. Von Drabman has done so six times and also holds the record for the highest aggregate baskets, 243-versus Vilayat in Vilayat in 1930.

Vagaskar, who has been on a record-breaking spree in the current rounds, can now set a few more. His immediate objective could well be the highest score at the Gotala Stadium. The best by an Indian is Mazharuddin's 53 against Vilayat in 1963-64. The highest ever is Michael Jordan's 58 for Wikies in 1955-56.

Sound absurd? Alas, it is true! However, not a whimper of protest gets raised when the same hogwash is cited for another sport to our ever screaming hysterical crowds of hundreds of thousands of fanatics of that sport.

Postscript A discerning reader will notice this spoof was written long before the "GOD" had arrived on the scene. The scenario now is

no different, only frenzied spectators sitting in front of TV have multiplied manifold. ❖



Yusuf Biviji

Having failed to migrate to USA, I joined IIMA after making my listless presence in 2 companies. At IITB I built up my thinking capabilities, whereas at IIMA I developed my faculty of lateral thinking. This article is a small example of this. Your bouquets, and specially brick-bats, will be appreciated at ysbiviji@hotmail.com

Teaching English to Freshmen

YASH TAMBAWALA & NIYATI JHAMARIA

Raju (name changed), a third year UG student, hails from a poor family in remote Andhra Pradesh. Raju was always a bright kid and his ambition and circumstances had pointed him towards IIT. Eventually, Raju did manage to secure a position in IIT-B, the dream destination for millions like him. But upon reaching here, Raju had another challenge posing in front of him. Raju was schooled in his mother tongue, Telugu, and was least conversant with the language of teaching at IIT, i.e., English. The difficulty of learning a new language seemed enormous to overcome. In addition to the academic burden, he not only had to acclimatise to the hostel environment but also to the English language. Raju did manage to acquaint himself with the English language. But now in his third year, he believes that the language barrier still persists. This keeps him away from good grades, internship opportunities, and a better social life. But, he is not alone.

Every year, a number of students (close to 10% of a batch of 880) admitted to IIT Bombay lack basic English skills needed to understand the topics being taught in lectures and to communicate effectively. This places them at an academic and psychological disadvantage relative to their more fortunate peers, who have a base in English education. More often than not, they also come from economically weak backgrounds. These disadvantages become apparent in the form of multiple

backlogs in the first year itself, usually accompanied by a severe lack of confidence throughout their IIT lives. While many students in the past (and present) have managed to pick up the language in their stay, there was always a need for a formal mechanism that could help these students transition from vernacular instruction to that in English.. Various options (English Remedial Programme, Intensive Programme for Entrants etc) have been explored to deal with this issue in the past. But all of them have been found lacking and ultimately unsustainable.

Last year, the Student Mentorship Programme (SMP) observed the growing prevalence of this issue and decided to tackle it. They restructured the English training by introducing a new programme called “Practical English Training” (PET) programme with a radically different approach. The PET programme was a completely student-driven initiative with students being appointed as Teaching Assistants (TAs) to teach English to freshmen. This decision was taken based on feedback gathered from students of PET’s predecessors, which had shown that student teaching assistants were very effective in connecting with the students.

PET programme also differed from earlier attempts at English training in many ways:

1. Focus on instructing students on the practical aspects of English (comprehension, reading, writing, speaking, basic gram-

- mar), as opposed to focusing on theory.
2. Instruction via engaging activities in class, as opposed to lectures.
 3. Flexible curriculum that could be changed according to the starting level of students, their speed of learning, and their wants and needs.
 4. Student tutors who would be able to connect well with freshmen, and eventually would take on a mentor-like role.

The programme was entirely voluntary for students, because of an optimistic belief that the class would be successful if students were enthusiastic to attend and learn, and a failure if they dropped out. Around 80 freshmen enrolled for the programme out of a batch size of 880. Classes were generally held on weekends by 5 TAs. The students showed a positive response to the whole idea of student tutors but attendance did tend to dip towards the end of the programme.

The takeaway from the programme was the effective delivery of content by student tutors. Their clarity and comfort level with freshmen helped keep the class lively and engaging. But at the same time, it was also felt that professional trainers who can design a structured curriculum and engage with students with these specific needs are required. In the long run, sustainability can only be ensured with the help of professional instructors supported by student tutors who can lead a concerted effort to reach out to needy students.

Efforts are on to find a lasting solution for incoming freshmen in the years to come. For next year, there will be a push towards finding professional instructors who can supplement the existing PET and solving remaining administrative issues related to funding and scheduling of classes. But to find a solution for the long term, much more thought needs to be put in structuring the programme. A permanent solution will greatly help Raju and other

students like him, whose numbers are growing on campus these days and in the future. ❖



**Yash Tambawala
& Niyati Jhamaria**

Niyati & Yash are fourth year UG students of the Department of Energy Science and Engineering and a part of the Student Mentor programme. They will be handling PET next year. Contact them at niyati.jhamaria31@gmail.com and yash.tambawala@gmail.com if you would like to know more or if you want to pitch in with ideas.

A Trip down the Ragging Lane

Nostalgia – that bittersweet window to the past does occasionally rake up memories more bitter than sweet. Ragging thankfully is no longer a part of student life at IIT Bombay, but a discussion amongst alumni recently brought forth recollections of this not so pleasant custom at our institution. We reproduce here some selected excerpts from alumni from the early years to the more recent to record the passage of ragging and how it was systematically rooted out from the campus. This is one tradition that thankfully belongs where it should – in the pages of history.

Stumblebee

I love IIT, my friends and my time there. IIT made us. IIT was undoubtedly the best thing that happened to us, most of my friends will agree. But in this emotional euphoria, I do not want to imply that everything was great. Throughout my first year I felt the atmosphere in the hostel was more hostile than friendly, thanks to the scourge of the disgusting rituals of ragging (hazing or bullying) that went on for several months into the year with significant emotional and often physical harm to some. I remember at least three or four people seriously thinking of dropping out within weeks of joining just because of this torture. For a couple of years I was actually afraid of several of our “seniors” in the hostel.

There are good traditions and bad ones, and terrible ones. It is idiotic to continue to a bad tradition because it is a tradition.



The Snobs

I also recall two distinct groups – one of us, the shy Gujjus, Ghatees and Bhayyas (somewhat derogatory slang for the people from the states of Gujarat, Maharashtra, and Uttar Pradesh) and the other, the group of those fast-talking sophisticates, a cigarette dangling from the mouth, they could say motha, fatha, teacha and the like in “perfect” accent unique to Indian Convent Schools and knew British Public School slang and all the cuss words, and they used them with incredible ease and linguistic facility. Every other word out of their mouths had to be a b- word as in “you bugga” or “you bastard”. Inspired by the incessant stream of obscenities from their mouths, I was indeed tempted to say to those clowns, in the only language they understood, “Shut the hell up, you Motha Fucka!”, but good sense prevailed and I never did. There was an unspoken but undeniable tension between the two groups until at least some of the people “grew up” in later years and we were all friends.

In subsequent years, with seniority, a small

number of the raggees became the ragers and began to enjoy what they hated so much during their freshman year. The ragers were a sorry bunch. They were losers in life and absolute cowards; they always operated in groups of ten or twelve, never alone for they lacked courage as well as sanity. Despite the wonderful memories some deviants may cherish both as ragers and raggees (some might call it the aberration of sado-masochism), educational institutions will be much better off without

If I could fight and stop hazing when I was a freshman, look into my eyes and see what I will do as President



this terrible tradition which has no socially redeeming value.

*Dnyanendra Natwarlal (aka Dan) Mayur
B.Tech, 1967, Chemical Engineering, Hostel 4*



First, let me share two philosophical points and then come to several practical examples of my putting my money (actions) where my mouth is.

I totally reject the "tradition" argument, which was often heard (both at IIT and in the US). Very simply, there are good traditions and bad ones, and terrible ones. It is idiotic to continue to a bad tradition because it is a tradition. Surely, we (society in general, and IITians in particular) have sufficient intelligence to distinguish between these! You have to put your brain on the shelf and not use it simply to claim that you are a lemming with no power to decide – just because it is a tradition. (It is unknown why lemming populations fluctuate with such great variance roughly every four years, before plummeting to near extinction.) I note that these same arguments

were used to keep Blacks and women out the US military and out of many clubs and organisations as well. They were going to irreparably damage these institutions! That tradition has gone the way of the dinosaur, and the fabric of the universe has not unravelled.

I also reject the "bonding" argument, i.e. seniors and juniors bond because of ragging. I do believe bonding can happen under certain conditions and often have spoken publicly of this thumb rule: if the senior is doing the same activity as the junior, it's a bonding exercise; if not, it's ragging/hazing. For example, when we all go and clean up a dirty stream or a section of the road (as I have done at IIT and in the US), and all of us are doing the same thing, that is a bonding activity, and it does make for great bonding (and does some good). If I, as the senior, am telling you to do some unpleasant thing or doing something unpleasant to you, while I watch and laugh, the "bonding" claim is a lie.

I agree that there are very harmful results of ragging (differential impact on different people, but we are all different people), and few redeeming features.

Now, to the practical examples:

I joined IIT in 1966 (your V year, Dan), and was in Hostel IV throughout my five years. Because (as it happened that year) there were a large number of freshmen that year in H4 (over 50%), ragging was minimal, and we actually developed a system of calling for help from fellow freshers if needed. [Amusing sidebar: My birthday is at the end of July, and I brought a cake to IIT to share with some of my new friends that weekend, which of course was close to the start of the academic year. One of them called out to another that evening, "Beheruz says come down to his room." Within minutes, there were 25 freshers at my room -- they thought I was being ragged and were there in an instant to overwhelm the seniors. There was no ragging and there were no seniors, but now I had five times the

number of people I had invited. We all had a teaspoon of cake as a result. But, it showed that the system we had devised worked well.]

I was, and still am, totally opposed to ragging (called hazing in the US), and I have backed up my feelings with real action. In my second year (I think I was on the H4 Student Council but honestly cannot be sure), and my third year as GS of H4 (continuing in my 4th year when I was GS of the IIT Gymkhana, and 5th year as well), I would not tolerate it. I used my position and the support of friends to stop it in H4 – I don't pretend that it was perfect, but H4 was a haven of non-ragging. Several times, when seniors from other hostels came to rag our freshers, we threw them out (made them leave). I believe that we really made a difference to the culture – there was essentially no ragging during my senior time in H4 (at a time when ragging at IIT was pretty bad).

Once at NCC camp when I was a fresher, the seniors decided to rag freshers and brought down a fresher tent late at night. Well – they messed with the wrong guy. I was their junior (by far) at IIT, but I had gone through two years of advanced NCC training before I came to IIT, and was the most senior NCC cadet at IIT – and held the rank of Under Officer (later became Senior Under Officer), and all the Army staff knew me well. So I (with permission) roused all the seniors and made them parade up and down in the middle of the night! As you can imagine, I had a lot of very senior IIT guys mad at me. I remember going to meet a senior (I think in his third year at the time) in his tent, and the other seniors were cussing me out – they didn't dare touch me because they knew what I was capable of, but they were being really nasty. I wish I could remember his name and thank him again, but he said to them that I was his guest in the tent, and that they should quit doing that.

Fast forward to decades later when I was President of the University of West Georgia

and we had some hazing incidents (a very small percentage, but one was too many for me), despite our education efforts. I have actually de-chartered a fraternity and sorority due to hazing. They could not re-charter for 3-5 years! I have done battle with their lawyers and with others on this issue. Once, after an incident, I convened a mandatory meeting of every fraternity and sorority member in our gym, and told them that I had had it (again only a very small percentage of them engaged

The stern attitude that the Institute has maintained against ragging since 1995 has been effective



in such activities, but I wanted to make sure the message was heard). I actually told them about the philosophical points and the IIT stories I have related in the preceding paragraphs and then I ended with this sentence. "If I could fight and stop hazing when I was a freshman, look into my eyes and see what I will do as President."

It stopped.

*Beheruz N. Sethna
B.Tech, 1971, Electrical Engineering*



There is no ragging in IITs any longer. It stopped around 95-96, with a huge push from administration and professors keeping a strict vigil. The professors could come into your hostel anytime of the day or night and go to any room to investigate. Any senior even talking to a fresher was questioned for the first few months of the first semester. There were anti ragging committees created within the hostels to help the freshers settle in and to stop any small incidents which the professors were not able to capture. Any complaint, big or small, by a fresher was taken very seriously and the senior was penalised. The senior

was assumed guilty by default and only if there was enough proof of innocence was he released.

Rajat Garg
B.Tech, 2000, Chemical Engineering, Hostel 2



Yes, Rajat is right. Ragging was gone when I entered. Simply because I think when you don't get ragged, you don't know how to rag. It is more sort of a transfer of pain, if you don't have it, you can't spread it.

I remember there was a senior fondly known as Suddu in H2. To sort of rag, he'd just sit and stare at you at the mess table or in the lounge with his intense gaze. I remember one of my batchmates called from the Hostel internal to DOSA saying he's been ragged. When being asked what happened, and him describing that he's being "stared" at, he was politely informed that it was not ragging. When he told us what he did, we laughed at him for 2 days.

Suddu was awesome; him, Aditya (Baddy) and Jose rekindled my habit of reading, and lent me lot of Sci-fi and Fantasy over the years.

When I went to H5, expecting heavy ragging, it was far from it. Sure, some of us were made to sit in the alcove above the door to be an owl, or to roam around the wing dressed as Superman/He-man, harmless practical jokes compared to the atrocities I heard from my other school batchmates who did not make it to IIT.

More so, there was no time. Here was a co-curricular year for a freshie.

Sem-I

Orientations, participate in Freshie GC, cheer in Sophie GC, Yantriki, MidSem, cheer for Main GC, start working for Insight/TF/Moodi, EndSem, MoodI

Sem-II

Techfest, main GC, MidSem, Elections,

PAF, Valfi, EndSem

There was no time to get ragged, and you wouldn't rag someone whom you expect to work with you in the co-curricular you have ambitions for. The downside of this was the Institute became very heavy handed in its approach to ragging – everything was black and white, no shades of grey.

My best friend, Devendra Rane, whom I've been playing with since I was in Std. V, from my hometown, joined a year after me (he took a drop). To welcome him, I went to his room in H2 and we chatted for hours, me telling him what to expect in coming months, and him telling me how coaching in Kota differed from that in Bhilai. We even had the room open. I had forgotten that seniors are not allowed to enter a fresher's room for first two months, and almost got the Disciplinary Action Committee (DAC) on me, if not for the kind H2 seniors who intervened on my behalf. We then met only in public places, and could not develop further on our friendship as much as we wished it to.

The second incident happened a year later when I was in third year. I was part of H5 impromptu team, and was giving orientation to the 2nd year-ites for an Intra-Hostel event 2 days later. The time rule was lights out at 9:00pm. At 9:00, couple of teams wanted to practice more and asked us that would we watch if they did some practice, and we agreed.

At 9:15pm, DOSA and campus security were in the hostel, and I again almost got a DAC against me. The saving grace this time was the Hostel Cult Co, and the Cult Secy were also "watching".

Since then, I followed the rules to the letter, scared of interacting beyond a point to the "untouchables" in their protected period.

On the plus side, in 2003, they started a mentorship program (like Big Brother) where there were appointed mentors in each hostel, and these people could interact with freshers

anytime they wanted (and vice versa).

Over time, I've realised that they tried to do the best from the resources they had, it would be tough to maintain no-ragging over 528 new kids, from thrice the amount of seniors. And the rules were there for my protection as much as the freshers. I just wished that we maintained "innocent until proven guilty" in matters like this. It was such a heavy handed approach back then that my friend Rane in the 1st case, or the 2nd yearites in the 2nd case were not even allowed to talk on our behalf.

Abhishek Thakkar

B.Tech, 2003, Civil Engineering, Hostel 5



Just to build on what Rajat and Thakkar have written, ragging in IITB was clamped down starting 1995 onwards and has never raised its head since. The key person who really drove this was Prof. Dipan Ghosh (DG) who was the DOSA (Dean of Student Affairs) then. And while it did appear that the administration was being heavy handed, I think they were fair. I quote 2 incidents below.

1. A group of sophies was ragged by a group of seniors in H6 in 1996 (or was it 1997). The DAC found the seniors to be guilty – approximately 25 seniors were shifted out from H6 and distributed to other hostels. Hostel change was a significant punishment as anybody here would vouch (imagine being sent to H3!). But on the other hand, as DG used to say, even if 1 or 2 of these 25 have been falsely accused, we can afford to go wrong. After all we are not impacting academic careers, we are just changing hostels!
2. Another case was a false complaint in H2 in 1996. I was the 4th respondent in a high profile case against Arvind Singhal (Institute GSec Sports), Rahul Saini

(Hostel Sports Co), Ashish Bhujang and Rishi Sanwal. I was interrogated by DG and the hostel Warden (Prof. T. Anjanetu) in DOSA's office – I was threatened with a hostel change – just like that. But since we hadn't done anything which could be called ragging (and it was accepted that just remembering mothers is not ragging ;-)), all 4 of us were let off with DOSA's warning – if ANYBODY for ANY reason whatsoever, harms or harasses that partic-

The Institute people tried to do the best they could to get rid of the issue and to a great degree have been reasonably successful at it without too many negative effects



ular freshie, all 4 of us will be punished!

The stern attitude that the Institute has maintained against ragging since 1995 has been effective, and I don't know of any instance where innocent were punished (even AT's examples also prove the same).

Rishi (aka Tau) Sanwal

B.Tech, 1999, Mechanical Engineering, Hostel 2



I do agree with Tau and Thakkar here that the Institute was heavy handed, yet reasonable in dealing with ragging. To recall another example – the decision makers at IITB (DOSAs, Chairman Sports, etc.) at one point ('99 or '00) were thinking of not allowing freshies on Institute teams for Inter-IITs because they were concerned about how seniors will deal with freshies away from IITB campus.

Fortunately, coaches were consulted before making this decision. Naturally, coaches rubbished the idea and gave examples like the Kopikkare brothers (for swimming) and

Kishore Bhalerao (for badminton) who won their respective events as freshies. So finally, after a lot of back and forth and with plenty of reservations, the decision was made to allow freshies on the teams and make coaches responsible for making sure that there was no ragging. I suppose they also realised that the number of freshies on the Institute team was so small that it would be pretty easy to keep an eye on them (rather than the seniors) to prevent any ragging.

All said and done, my conclusion (with the great benefit of hindsight) is that the Institute people tried to do the best they could to get rid of the issue and to a great degree have been reasonably successful at it without too many negative effects.

Cheers,

Kalpesh (aka Pa)

B.Tech, 2002, Engineering Physics, Hostel 5



Creative Bees at Fundamatics

ILLUSTRATION



Shreyas Navare
C'08, SJMSOM, H-13

Shreyas Navare, Mumbai, Senior Manager, Marketing and Corporate Communications at a private bank. He freelances as a Editorial Cartoonist for Hindustan Times. He has covered elections in 6 Indian states through the eyes of a cartoonist on behalf of HT. Shreyas has held many cartoon exhibitions, two of which were inaugurated by Dr. A. P. J. Abdul Kalam. His first solo international cartoon exhibition was held recently at Bangkok. His second exhibition was held at Nehru Centre recently. Cartoons featured in this issue are from the exhibition.

EZINE



Abhishek Thakkar

Abhishek Thakkar or just 'Thakkar' as he was known throughout campus is an alumnus of H5 from '03. Having a lot of it, he loved throwing his weight around, and escaped many a bumps which he'd have got for his PJs. Now he channels all that creative energy in designing beautiful, scalable web and mobile interfaces.

DESIGN



Anand Prahlad
C'07, IDC, H-8

Anand Prahlad is an independent graphic designer and artist. When not designing books, magazines, corporate identities or illustrating, he is an active gardener, culinary expert and amateur musician. He runs www.magic-marinade.com, a food and travel blog, and also www.thenewvitruvianman.com, where he writes and illustrates articles on design, gastronomy and music.

PUBLISHED BY

IIT Bombay Alumni Association

ISSUE NO. 10. JUNE 2014

MAILING ADDRESS

IIT Bombay Alumni Association,
1st Floor, Gulmohar Building, IIT Bombay,
Powai, Mumbai 400 076

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trikkon_dp@rediffmail.com

