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SENTIENCE

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Science And Sensibility

Reading between the lines

National Science Day is celebrated annually on February 28th to mark the discovery of the Raman Effect by Sir C V Raman, for which he was awarded the 1983 Nobel Prize in Physics. Being a science-loving and science-obsessed community, IISER Pune could not help but celebrate this day of national importance. Therefore, 28th February was declared a non-instructional day, and arrangements were made to enable students from outside to come to our campus and obsess over science with us.

The programme was inaugurated by our Director, Prof. K N Ganesh, who commenced the day with a speech on the developments in science including those at IISER Pune. The first talk of the day was given by Prof. Sriram Ramaswamy, from the TIFR Centre for Interdisciplinary Sciences, Hyderabad. He addressed the subject of Biophysics in a very distinguished manner. He remarked that there was a dire need for the application of Physics in topics of Biology. He also presented interesting ways to imitate apparently purposive movements in lifeless particles. This was followed by a talk by Dr. Ashish Lele from NCL, Pune, on the topic - 'From molecular structure to polymer processing: bridging length and time scales.' He spoke on the increasing importance of India in the polymer manufacturing industry and the fact that its sustainability relies on a deeper understanding of polymer properties.

Following the lectures was a presentation of short films on science - produced, recorded, and narrated by students who had participated in the movie-making workshop conducted by the Science Media Centre.

After lunch, the most awaited event of the day, the poster exhibition, commenced. The two categories of presenters, PhD and BS-MS students, along with their respective mentors, presented posters on their topics of research. They patiently explained their topics and ideas to each group that happened to glance at their poster. The entire event was organised by Dr. Sheela Donde with the help of student volunteers from IISER Pune.

IISER Pune also held a book exhibition in parallel to the Science Day celebrations. This gave students a chance to buy science-related books at discounted rates or recommend books that they found fascinating, to the IISER Pune library. The exhibition featured books on a vast number of subjects, from Ecology to Cosmology. From boring textbooks to flashy, illustrated, impossible-to-afford books,

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Every π Counts

Ajith A Nair

No prizes for guessing what the sizzling buzz on the campus was, in the two weeks that followed the successful Science Day event. Yes, it was the Mathematics Day celebrations, which kicked off on 13th March with a spectacular Math quiz for college students across Pune, organised by Dr. Chandrasheel Bhagwat and Sourajit Basu. 14th March, Math Day (or π Day, whichever you like) exceeded expectations. It commenced with Dr. Shashidhara 'dissecting' the π-cake, and the release of promotional accessories, such as a clock with numbers as functions of e, i and π. Adding to the charm of the event, our Math(aholic) professors unveiled the new Math T-shirt of IISER Pune. This Math Day was all the more special as the year marks the 125th birth anniversary of Srinivasa Ramanujan.

The first event of the day was a colloquium by Prof. Chandrashekhar Khare from the University of California, Los Angeles, on 'The congruent number problem and elliptic curves.' As usual, it began with an innocent problem and soon drifted off into the complicated realms of number theory. The audience, however, showed a lot of interest in the talk, thanks to the wonderful efforts of Prof. Khare. At the end of the talk, he felicitated the winners of the Math Quiz - the third year BS-MS team comprising of K Hariram, M Sainath, Nishad M and Mihir K, and the runners-up. Prafulla S Dhariwal and Mrudul M Thatte, the gold and silver medallists of the International Mathematics Olympiad 2012 were felicitated too. The next in queue was the long-awaited skit 'Life of Pi (4D)', with the jam-packed hall an evidence of the huge interest that the skit had generated among the audience. Even IISER Pune students are of the belief that Math guys are typically nerds, normally lost in a sea of equations and abstract talks. Barring all odds were Dr. Steven Spallone and his team with a hilarious drama depicting the life of the mathematical constant π. Be it the musical ensemble, Sage Lindemann, or Archimedes cooling off with sunglasses, it was an absolute Math-ertainment. Like always, we couldn't 'see' the 'fourth dimension' of the skit!

Dr. T V Venkateswaran from Vigyan Prasar with the π clock

The second half of the day began with the screening of Nandan Kudhyadi's 'The Genius of Srinivasa Ramanujan'. The documentary features the famous number theorist Ken Ono, and our own Prof. A Raghuram. The movie brilliantly captured the cultural ethos Ramanujan grew up in. The screening was followed by a question-answer session and an acknowledgement of those who had contributed to the success of the movie.

After a tea-break, there was a seminar on algebraic geometry by Dr. Vivek Mohan Mallick. He showed the geometrical perspective behind various algebraic results in a delightful manner. Prof. A Raghuram then concluded the Math Day event with a brief vote of thanks and special acknowledgement of the chief organisers Dr. Chandrasheel Bhagwat and Dr. Anisa Chorwadwala. On a concluding note, there remains only one thing to be written - 'Mathematicians truly rock!'

To Tunnel Or Not To Tunnel

All of us know that the environment's condition is getting worse, and that Pune is just getting dustier. The government's development plans often do nothing for the environment, and in some cases, harm it. One of their most recent plans has been a proposal to construct a tunnel through the beautiful Panchavati hills, to lighten the traffic on Senapati Bapat Road, which is nearby. This has caused some concerned citizens to sit up and take notice, and among them are those at the Centre for Development Studies and Applications at the University of Pune, and over a hundred and ten concerned volunteers from Pune and the surrounding districts. Prutha, IISER Pune's environment group, is part of this volunteer workforce. The plan is simple: to do an Environment Status Report (ESR) for the Pashan ward, or Ward 10, which will be the first ESR in India being done by citizens themselves. The idea is for the people who live in the ward to directly contribute to how the government's plans affect them, and to take the responsibility of assessing the environment's state into their own hands. The problem with the ESR produced by the Pune Municipality is that it contains only information that has been averaged across each of Pune's wards: there is no way of knowing which ward has the worst air pollution or which is in need of better drainage. Among the many surveys to be done, the traffic in Ward 10 is being counted over the next few weeks and a report is to be submitted to the government, in the hope that their plan to drill through the hills will turn out to be unnecessary and will be halted. Trial surveys were conducted by the Prutha volunteers who counted the vehicles speeding by on Pashan Road on the 24th of February, and official surveys began on the 14th of March.

Helping hands are needed and will be appreciated. If you're interested in contributing, contact Reshma C: (reshmac@students.iiserpune.ac.in). After all, Pune is our city, and anything we do to help make it a better place, helps everyone.

Mage Valun Pahatana

Team *Mage Valun Pahatana* in performance at Bal Shikshan Mandir

The scent of earth drenched by a light summer shower and the notes of fine music with a romantic narrative lingered in the Pune air on 16th March. '*Mage Valun Pahatana*,' translated as 'When I look back,' was a romantic musical evening staged at Bal Shikshan Mandir, Kothrud, by a group consisting mainly of students of IISER Pune. The inception of '*Mage Valun Pahatana*' was by Nachiket Khasnis, and his better half Manasi Kulkarni-Khasnis, research scholar at IISER Pune. The musical ensemble consisted of Chaitra A on the *veena*, Abhijeet B on the *tabla*, Srikrishna S on the guitar and Kalyanee S on the synthesiser. '*Mage Valun Pahatana*' is the story of Sameer and Priya and their love, told in the form of a musical. As Priya flips through the pages of her diary, she reminisces of her then-newfound love. As the story progresses, she confesses to the audience about the delights and despondencies of their relationship.

With each diary entry, the ensemble narrated her story in the form of a song. The narrative and songs were cleverly written, incorporating humour, satire, and even contemporary forms of expressing love through online chats and SMSes. This was a classical take on a modern love story. Most of the music was composed by the team, with Manasi as the lead singer. As her melodious voice enthralled the audience, the young and the old couldn't help but break into cheer and applause after each piece. The most popular song of the evening was Kalyanee's '*Mi dating kele nahi, mi setting kele nahi*.' On popular demand, she gave an encore. It was the men, Abhijeet and Krishna, who were the showstoppers with their *jugalbandi* on the *raga Bhairavee*. Following this, there were successive *jugalbandis* with notes bouncing off from one instrument to another, creating rich music that left the audience spellbound. The concert ended with the release of CDs of the musical and the audience left with the sweet sounds of love resonating in their hearts.

Science And Sensibility

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everything was offered at much lower rates. There was even a section of works of fiction including a few Penguin publications and the new release by Amish Tripathi. The exhibition saw hordes of book-lovers scrutinising every book diligently before picking out their favourites.

IISER Pune was suddenly flooded with an excess of fresh, enthusiastic, and optimistic minds as students and faculty from various schools and colleges came to celebrate Science Day with us. Surprisingly, many school kids showed a lot of interest in the activities despite the technical complexity of the lectures. There were many who sat through the entire programme and participated enthusiastically in all activities. The day was declared a success and concluded with the Best Poster Awards to the BS-MS students Arya Thampi, Bodakuntla Satish Sruthi Polali, and the PhD students A T Dharmaraja, Abhigyan Sengupta, Kanika Bansal, Koushik Karmakar and Sneha Bhogale.

Academic Buzz

Siddhartha Das

1. Summer Internship at Freie Universitat Berlin (FUB), Germany for INSPIRE Scholars
Dates: February 2013 to December 2013
Organised by: FUB-INSPIRE
URL: www.fuberlin.in

2. IASC Data Analysis Competition
Dates: 22nd -23rd August 2013
Deadline: 15th April 2013
Venue: IASC Satellite Meeting, Seoul
URL: http://www.isi-web.org/recent-pages/691-iasc-data-analsys-competition

3. Shanti Swarup Bhatnagar Prize For Science and Technology 2013
Date: 26th September 2013
Organised by: Council of Scientific and Industrial Research (CSIR), India
Deadline: 31st March 2013
URL: http://csirhrdg.res.in/advtSSB2013.pdf

4. Annual Foundation School (NBHM)
Dates: 2nd to 28th December 2013
Deadline: 15th July 2013
Venue: KSOM, Kozhikode
URL: http://atmschools.org/2013/afs/afs-i

5. Instructional School for Lecturers on Geometric Measure Theory
Dates: 9th to 21st December 2013
Deadline: 12th July 2013
Venue: CEMS, Almora
URL: http://atmschools.org/2013/isl/gmt

6. Advanced Instructional School on Classical Groups
Dates: 5th to 26th December 2013
Deadline: 5th July 2013
Venue: IISER, Pune
URL: http://www.atmschools.org/2013

7. Instrumentation School - Dunlap Institute Summer School
Dates: 11th to 16th August 2013
Deadline: 12 April 2013
Organised by: Dunlap Institute for Astronomy & Astrophysics
Venue: University of Toronto, Toronto
URL: http://dunlap.utoronto.ca/education/instrumentation-school/

Prison Break

Another month rolls by. The bustling nature of life in IISER sometimes feels monotonous. So it's good to stop and find out what you have overlooked.

The most recent development on the IISER grounds is our brand-new, fancy-looking, lit-at-night gate, which, no doubt, has made instructions to most auto drivers easier. What disturbs one are the rules that have sprung up regarding the gate. Let me lay it down for you - the front gate rule - "Girls are not allowed to leave the campus (using the gate) after 10 PM, while boys are allowed to do so till 11 PM"; the back gate rule - "10 PM on Saturdays and 8:30 PM on other days".

The first rule is truly infuriating. The difference in the times is so little that it is as if only to mock the feminists in IISER. In this context, I find the predicament of IISER females similar to that of inmates in a correctional facility. We are given 10 PM to 11 PM to "get some fresh air" but a breach of perimeter will sound an alarm. While it is clear that crimes against women are on the rise and hence security is of utmost importance, the females would much appreciate it if the timings were the same for both sexes.

As for the second rule, we all know that the city of Pune, quite like an adolescent, grew too fast for it to handle itself. As a result, Baner and Pashan, seemingly closeby areas have very poor connectivity by bus (no wonder the ABIL chap bought a helicopter!) Thus, the perpetually broke souls of IISER consider the back gate of our campus the cheapest and most convenient way of getting to Aundh/Baner on Saturdays. But how do you get back?

The average group of IISER friends realise that it's Saturday and that they have to go out for dinner at roughly 8 PM. So in most cases, dinner in Aundh means encountering two closed gates; The back gate is closed after dinner's done, and the front one is closed by the time you walk through NCL and reach IISER.

On weekdays, on the other hand, the gate closes at 8:30 PM, leading to the question of why it is open at all. Upon enquiry, the Sentience team found this justfication: The guard at the back-gate is appointed by the contractor (as opposed to Great Wall) and is underqualified to man the gate at late hours, for security reasons. An obvious solution to this problem is to shift one of the oh-so-many guards at HR4 to the back gate.

On the whole, the new rules seem promale and poorly reasoned out. Both of which are unforgivable in the scientific community.

Art Form Of The Month: *Kathakali*

Kathakali, literally story-play, is an art form from the state of Kerala that traces its origins to the 17th Century. *Kathakali* is a dance drama in which the artists usually present stories from famous Indian epics. The most striking features of this art form are the ornate makeup and elaborate costumes involved, which impart another dimension to the performance coupled with the detailed expressions of the artists.

Another important feature of *Kathakali* is the background music which consists of singers, percussionists (on the *maddalam* and *chenda*), and cymbal-players. The musicians create an ambience for the performance by altering the pace of their singing and they are versatile in creating various moods.

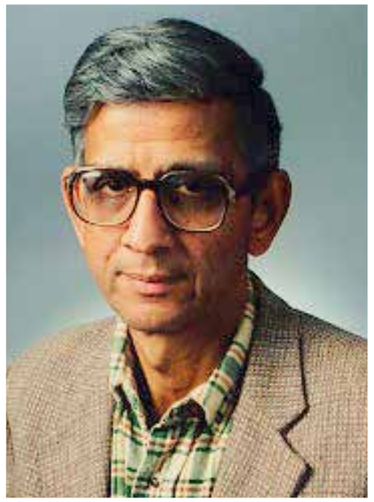
The beauty of *Kathakali* lies in the expressions of the artists. These expressions are conveyed by movements of their neck, eyeballs, eyebrows, and facial muscles. The extraordinary control they have over these muscles is a result of years of rigorous training. Eyes are an important medium in this dance form, for it is with their eyes that they convey a thousand words. *Mudras*, which are movements of the hands, are of a particular number, with each *mudra* having a specific meaning.

The intricate makeup, apart from lending beauty to the performer, also gives identity to the character that they are portraying. Specific colours of face paint are indicators of particular qualities of the character. Green is an indicator of the virtuosity of the character, while green with red strokes indicates that the character has an evil side to him. A completely red face and beard implies that the character is entirely evil. Women and ascetics are portrayed using white and lustrous paint.

A typical *Kathakali* performance starts late at night and goes on till early morning. They are usually conducted in a large open area with an erected stage and a *pandal*. A traditional Kerala lamp, *kalivilakku*, is usually placed in front of the stage as the only source of light. Specific stories from Indian epics like the Mahabharata and the *Puranas* are performed. The artists incorporate the *navarasas* into their performances to bring about the deep emotions of these stories.

A unique dance drama which conveys the story through just expressions and instrumental music, *Kathakali* is one of the richest art forms that India has to offer.

Of Notes And Numbers



Professor Krishna Balasundaram Athreya delivered a wonderful talk-series on various topics of Mathematics (and even one on Indian classical music!) in the week of 4th-8th February, here at IISER Pune. The Sentience team was in conversation with him.

ST: What did you have in mind when you decided to give the talk on Indian classical music?
KB: My goal was to expose students to an incredible session (right at their doorstep), so that they'd be inspired to listen to classical music for the rest of their lives.

ST: Was there a special motive behind the Math talk-series?
KB: I love Mathematics and I enjoy doing it at all levels. Explaining mathematical concepts to young people who do not like the area is a challenge; that is what motivated me to give these talks. I hope that some of them, listening to it, may pursue Mathematics and in turn go to places where Mathematics is not being taught to the fullest (like villages or government schools) to explain mathematical reasoning in a nice way. And who knows, out of these kids in villages, a kid as great as Ramanujan might be found.

ST: How did you become a mathematician?
KB: I hail from a small village down south near Kanyakumari, Tamil Nadu with two streets, a lot of paddy fields and just one school. My father was the headmaster of the school. I was learning Algebra at that time, and it hardly made sense to me. I managed to pass with a 40 out of 100.

My teachers told me that, like my father, I was not good at Mathematics, but at school you had no choice but to learn it. My brother advised me that life was not all that bad. One could just write the AGS exam and get into government service. But when somebody tells you things like that, you feel like a failure in life. So I went to my mother and cried to her saying, "My teacher said I am going to flunk in Mathematics." She consoled me and took me to her uncle who was also a Mathematics teacher.

He was a wonderful teacher. He brought Euclid's book on geometry and showed me some propositions on triangles and asked me what I understood. When I said all of that didn't make any sense to me, he explained it to me in a wonderful manner. He said, "For any mathematical proposition, you are given something and you have to establish something. So your first task is to identify what it is that you are given and then you just reason it out step by step to reach what it is that you want to establish." He said time wasn't a constraint and speed never mattered. Although what he said was all trivial, my previous teachers had never told me any of that. So his words transformed me.

I slowly understood the propositions and he gave me exercises to be done at home. And I started doing well in Mathematics and gaining speed too. I was able to stay in composite Mathematics and take my intermediate. I got into Loyola College and did a B. A. in Mathematics. IAS was a fantasy back then, but my English was very bad and I could only blink at the question bank given to me. My sister came to my rescue. She came across an advertisement, in The Hindu, of the entrance exam for ISI Kolkata. I cleared it and I studied there. Later on, I thought I would pursue research there, but I was kind of lost till one of the professors there advised me to go to the USA. He gave me a list of universities to approach but I had no idea of how to go about that. I made a rough draft and showed it to my Prof. He said it was just horrible and he edited it. I got good offers from great places like MIT, Stanford, Columbia, etc. Again, I didn't know where to go. I finally ended up in Stanford University and finished my thesis in 3 years.

I am concerned about kids in rural areas, who do not have enough support and guidance, and can't make progress.

ST: When did your interest in classical music begin?
KB: I grew up in a village where in the temple close to my house, you could hear music almost all the time. You could listen to the *nadaswaram*, witness the *kolaattam* , and hear the *bhajans* especially on *Ramanavami*. You just kept hearing music, especially folk music and *bhakthi* songs. Then radio music came and my sister started to learn music from a good teacher. I would sit in the veranda and listen to them. Eventually I picked up and could identify *ragas*. When I came to Chennai, there would be nice programmes on TV and nice *sabhas* would organise concerts at nominal rates or for free. But when I went to Kolkata, I realised there was other music too. I listened to a lot of Bengali folk music. It was only when I went to the US, when Pt. Ravishankar had become famous there, did I get into Hindustani classical music.

One day, I saw many Indian musicians going by. I went to them and requested them to perform. At first they declined but later, they accepted. Greats like Pt. Ravishankar and Ali Akbar had come to perform. It was then that I developed a great interest in Hindustani music and learnt about it.

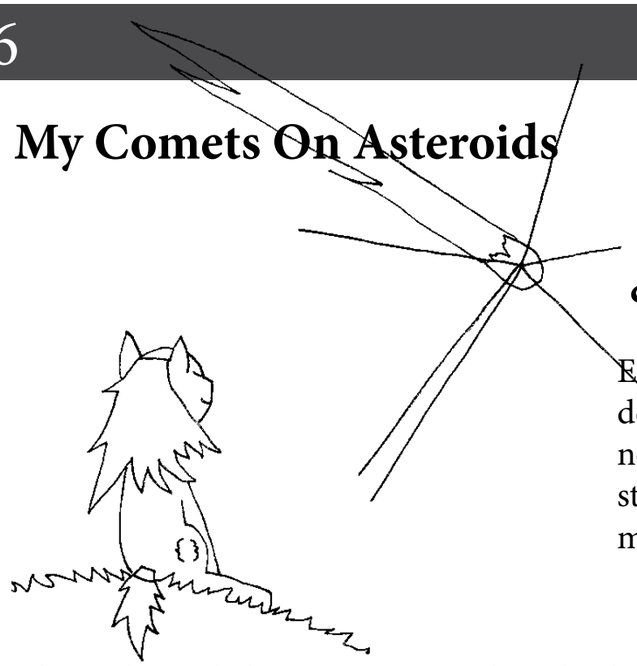
Even now, some of my friends interested in music gather in my house where I play music and explain it.

ST: What's your favourite kind of music?
KB: I like *Vilambit*, or very slow, music, unlike the fast beats of the *mridangam* and *trikal sangatis*, that don't please me. On the other hand, I love singers who, with the *tanpura*, very slowly and elaborately develop a *raga*.

ST: What is your message for IISER students?
KB: You are in a good situation. You've been exposed to classical music. Enjoy life. And if you have time, identify a kid or family in a poorer section and help them . Everybody can't do it but if you can, do it.

My Comets On Asteroids

Kapil Tirpude



> “It enters the atmosphere of the Earth and due to excessive friction, this debris starts to burn. This phenomenon is observed on Earth as ‘shooting stars’ (formally, meteorites). Comets must not be confused with asteroids.”

It’s no wonder as to why the year 2013 is being regarded as the year of naked-eye comets. Right from Comet Panstarrs (February-April), this year is blessed with comets like Comet Lemmon (March-May) and Comet Ison (November). The question that naturally arises in people’s minds is - where do these comets actually hail from?

They originate in the super-cool areas from the orbit of Neptune, the ‘Great Solar Nebula’ (the nebula from which the Sun and the solar system are believed to have been born), and are fragmented and condensed to form tiny little chunks of Hydrogen, Helium, Methane, Ammonia, water, dust, and other trace elements or molecules. These comets have sizes of about a few kilometres. These chunks of ‘ice’, called comets, were formed as two separate groups in the form of two huge belts, called the ‘Kuiper belt’ and the ‘Oort cloud’, named after their discoverers Gerard Kuiper and Jan Hendrik Oort, respectively. These belts lie at distances of more than 30 Astronomical Units (AU) and 50 AU respectively from the Sun. The disturbances are caused due to the strong gravitational fields of Jupiter, Saturn, Uranus and Neptune, which in turn causes the orbit of these comets to shift towards the Sun. Eventually they orbit the Sun in a path that can be described by the equations of conics. Depending on the eccentricity of the orbit of the comet, they are classified as periodic comets (for example, Halley’s Comet has eccentricity = 0.977) and non-periodic comets (for example, Comet Panstarrs with eccentricity = 1).

When these comets cross the orbit of Saturn, solar winds and radiation cause the comets to melt and, later, ionise. This phenomenon is seen as the ‘tail’ (formally, coma) of the comet. Usually two to three tails, each made up of ions and neutral molecules, are seen. The tails stretch out for thousands of kilometres in space. When the comet is approaching the Sun, the tail follows behind the comet, but when the comet retreats, the tail leads. Usually, these comets leave behind the debris from their surface in their wake. When Earth passes through that area, this ‘debris’ is captured by Earth. It enters the atmosphere of the Earth and due to excessive friction, this debris starts to burn. This phenomenon is observed on Earth as ‘shooting stars’ (formally, meteorites). Comets must not be confused with asteroids. Asteroids are really big chunks of ice and rock which are found prominently between the orbits of Mars and Jupiter, and are quite large in size, compared to comets. Asteroids don’t show a ‘coma’ when they encircle the Sun.

Comets are usually named after their discoverers. Comet Panstarrs is a comet hailing from the Oort cloud. It was first seen through a telescope named PANSTARRS in Hawaii, in June 2011, when it was seen at an apparent magnitude of +14. It has now approached its perihelion and hence is dazzling in the skies. It has been visible to the naked-eye in the Southern Hemisphere right from February 2013. From 10th March onwards, it was expected that it would be seen with very low intensity on the southwestern horizon in the Northern Hemisphere. But an appreciable view of the comet has been seen since 12th March. The comet glows at a magnitude of 0, but since it is visible only during twilight, it is a very difficult object to spot. A 10x50 binoculars or a telescope working at 40x can easily pick out the comet with its magnificent tail clearly visible.

Comet Lemmon, however, may not make it to the northern skies. It is presently in the Crux constellation, far towards the south. It is a very faint comet and is seen at a magnitude of 3 in the southern skies.

The year 2013 will be blessed by the marked appearance of Comet Ison, which will be seen from the Northern Hemisphere in the month of November. The awe and dazzle surrounding this comet is comparable to that of Comet Hale-Bopp that appeared in 1997. It is expected that this comet will rise up to a magnitude of -2. However, at times, predictions of both brightness and the path of comets cannot be precise and these are rather close approximations. Comets tend to change their paths, and also magnitude, owing to several factors like perturbations due to gravitational fields, varying strength of Solar winds etc.

A comet-gazing session was arranged in IISER Pune on the evening of 15th March for astro-enthusiasts, since the comet was seen 15 degrees above the horizon that day. Check the Sentience website for further updates.

*The period in parenthesis refers to the duration for which the comets can be viewed using terrestrial amateur telescopes/binoculars.

Bed Bug Boom!

Bugged!

They are nocturnal, silent and stealthy. They are nearly impossible to detect, being lightning fast in their escapes. Their bloodlust has been inciting panic and fear since as early as 400 BC. And now they’re taking over the world.

It’s not just the rooms of the new IISER hostel that have been witnessing the Rise of the Bedbugs. The entire world is united in facing the intensifying threat of these bloodsuckers. The USA is in panic - even posh establishments like Victoria’s Secret Showrooms and Broadway theatres have not been spared; the Australians are spending thousands on pest control; the British (those of them not sitting, toughing it out and mocking American ‘pansies’) are on moving sprees in order to distance themselves as much as they can from these real-life vampires; and in India, politicians are giving elaborate speeches on how their rivals behave like bedbugs. Germany, the Czech Republic, countries in the Gulf are all reporting increased bug-infestations.

So why are these glistening chestnut-brown, apple-seed sized creatures creating such havoc among a population of members around a thousand times their size? Well, they are creepy, multiply rapidly and suck blood. While that would have been reason enough, they also leave itchy rashes and despair behind. To add to it, there is the societal dishonour associated with having bedbugs share your housing - people are reluctant to visit and let you visit. And of course, there is the big, big hole in your pocket burnt out by pest-control.

Most bedbugs feed painlessly on humans (and other victims, like bats and birds). They inject a small amount of saliva into the host’s skin. The more they feed on a host, the more sensitive the host becomes to their saliva, eventually leading to allergic responses. Though a huge annoyance, they are not observed to be pathogenic. Potential hosts are detected by their warmth and the Carbon dioxide exhaled by them. Bedbug activity peaks at around a couple of hours before sunrise.

Bedbugs multiply rapidly. In fact, adult females lay some 5 eggs daily. Thus even a tiny population of bedbugs can burgeon to large numbers in a very short period of time. And thus they grow day by day. Not just in cracks or rooms or houses, but across countries. Studies are suggesting double-digit percentage growths in bedbug populations around the world annually. Researchers have gone as far as to suggest that we are “on the verge of a world-wide bedbug pandemic”.

Reasons cited for the sudden upsurge in their population are increased amount of domestic and international travel, change in pest control techniques, lack of awareness and quick response amongst affected people and of course, increased resistance of bedbugs to pesticides.

Travel enthusiasts, along with all their baggage, lug around hidden bedbugs and their eggs. These unwanted hitchhikers then settle down with their ride and comfortably thrive in hotels, lodgings and homes. Given that bugs can patiently wait for months together without a meal, temporarily uninhabited places provide no challenge at all. Looking at recent history, the number of bedbugs around the world had gone down drastically after the Second World War, aided by the introduction of potent pesticides like DDT, and some blame their resurgence on the ban imposed on DDT and DDT-like pesticides. The milder pesticides in use today are ineffectual against the biological tricks employed by bugs – according to various studies, bedbugs have undergone mutations leading to thicker skin to reduce penetration of pesticides, production of higher levels of enzymes that make metabolism of pesticides easier and so on.

However, scientists are struggling to catch up with these hardy survivors by combining bedbug pheromones with insect control agents, thus using their own weapons against them. Though the method still has to stand a few more tests, other methods of bedbug control, apart from fumigation and pesticide-sprays, exist. Our oldest and most reliable accomplice in this battle is our good old Sun. One of the reasons Indians haven’t been going crazy despite sharing abodes with bedbugs is that they just need to keep their furniture and clothing out and the Sun’s warmth will do their job for them. Other places around the world do this artificially by providing heat-chamber treatment to infested furniture since it is very difficult to find bugs resistant to temperatures higher than 50°C.

At a more personal level, what can we do to detect and get rid of this nuisance? Among the common signs of an infestation are: finding bites on you when you wake up, spotting bedbugs and bedbug eggs (poppy-seed like in their appearance) in seams of bedding, and finding clumps of tiny dark-brown spots that smell bad (because they are bedbug faeces). To save investigation efforts, you can employ dogs that are specially trained and can sniff out bedbugs in a couple of minutes. Once you’re sure of their existence, you could use some of these tried-and-tested strategies of attack- soak your clothes and sheets in hot water before you wash them, or spread them out in the sun. Keep your bed and furniture slightly away from walls. Repair all cracks and crevices on walls where bedbugs can settle. A rather clever trap is to stick tape (sticky-side-out) on bed-legs to prevent them from climbing up. Be extremely careful about second-hand furniture. Also make sure your luggage is free of bed bugs before traveling to any place. For those females and metrosexuals trying to save waxing money, here is a tidbit. Research has shown that hirsute people have an advantage over squeaky-clean limbed people, because body hair offers resistance to bug movement. However, extreme Neanderthal-ness serves as a haven for parasites. So men draw out your razors and women observe No-shave Novembers to make sure you maintain the right levels of bushiness.

Troubled times lie ahead. At this stage, it is very important to get rid of the social stigma associated with bedbugs. They invade spick-and-span as well as dingy surroundings, indiscriminately. An infestation is not a sign of lack of hygiene, it simply means misfortune. So shed all that shame, bring out your weapons and prepare for war!

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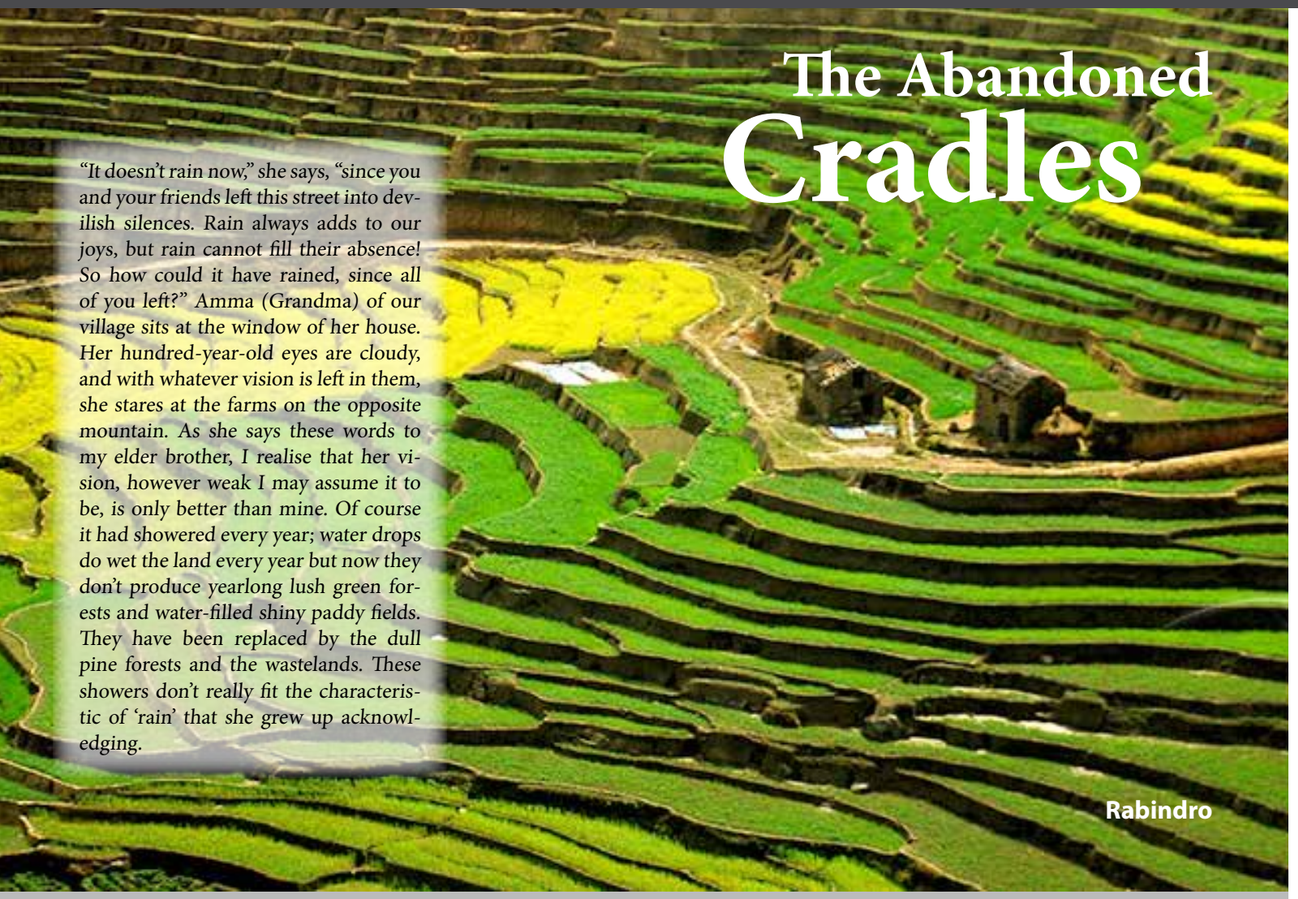
The Abandoned Cradles



"It doesn't rain now," she says, "since you and your friends left this street into devilish silences. Rain always adds to our joys, but rain cannot fill their absence! So how could it have rained, since all of you left?" Amma (Grandma) of our village sits at the window of her house. Her hundred-year-old eyes are cloudy, and with whatever vision is left in them, she stares at the farms on the opposite mountain. As she says these words to my elder brother, I realise that her vision, however weak I may assume it to be, is only better than mine. Of course it had showered every year; water drops do wet the land every year but now they don't produce yearlong lush green forests and water-filled shiny paddy fields. They have been replaced by the dull pine forests and the wastelands. These showers don't really fit the characteristic of 'rain' that she grew up acknowledging.

Rabindro

Our identity is not in the imported language that we use so proudly, it is not in the cola drinks that we drink, and it is not in the glass covered skyscrapers of our metropolises. What defines us on the global map is what our civilization has achieved and stored in its five thousand years of existence, and what better place to store those achievements than in the six hundred thousand villages, where our culture is not restricted to the fat books in city libraries, but where it gets expressed in the lifestyle of more than six hundred million villagers. The soul of this nation, as Gandhi-*ji* puts it, is in its villages. These are the cradles of our civilization, the birthplaces of our folklores and fables, and the storehouses of our cultural heritage.

It is a privilege to have experienced and at the same time to have been able to understand and appreciate the magical environment of a village - to know what homegrown, unadulterated food tastes like, to know what the smoke from the wet wood smells like, and to be able to anticipate the taste of rice cooked over the wood-fire, to run into the orchards and eat your favourite fruit without washing or cutting it, to shout among the mountains and get excited listening to your own echo, to run singing and shouting with friends, to live without Facebook or Google. To the sceptics, such a world really does exist in 2013.

But the very existence of such a magical world is in danger. The six hundred million Indian farmers who work day and night to feed the nation are the ones who have to suffer from hunger while their produce rots in the godowns of the cities (with due credit to our 'unparalleled' Public Distribution System). In light of this fact alone, it is hardly surprising that forty per cent of our farmers are willing to leave farming as a means of livelihood. In the last decade of the twentieth century, more than seventy million farmers left their villages to settle in the cities. They left behind farms that no longer produce food. And yet our Prime Minister, who also happens to be a perspicacious economist, suggests that the state can help the rural poor better if they move to urban areas. This suggestion was, in fact, opposed, but with an equally unfortunate argument that such an encouraged migration will have an adverse effect on our cities (as if they are being managed so well). But neither the mainstream media nor the urban intellectuals care to think about the adverse effect such migrations have on the villages. The so-called distinction between India and Bharat expresses itself very clearly in such debates of the urban dwellers.

The asymmetric development of the nation is effectively no development at all. Therefore, as suggested by our former President, Dr. A P J Abdul Kalam, India's developmental policies need to adopt the PURA Policy (Providing Urban amenities in Rural Areas). Millions of young men leave their villages in search of employment in cities and have to work for meagre wages that sometimes are not enough to satisfy their own hunger, let alone sending money back home. Amma's own grandsons have left the village and are in similar conditions. There is no one to work on the farms and no one to play on the streets. The cradle of human civilization is abandoned. It doesn't rain back there in the village.

One midsummer morning, casually glancing at the wonder of tiny colourful trees in the model of the future campus, for there is little else to stare at these days, the author found much more than balls of green putty. Somewhere in the periphery is a financial desert where the student population ends up in the middle of the month. Thirsty and deprived of liquid funds, they trudge along to the month-end oasis. En route, there is much grumbling about the well-stocked travellers and the administration. Most of this is unfounded and rightly unheeded, revolving around the careless expenditure by the Institute. But Sentience lends its ears to some of the relevant arguments.

The starkest example of wasteful expenditure of funds by the Institute is seen in their lack of foresight. Much money has been spent in drilling man-holes in the walls for the purposes of ACs and LAN cables in HR4 and the New Hostel respectively. Even without a magic mirror, a little thought about their purpose while building these structures, would have revealed that ACs and LAN cables might have to be fitted in the future and provision should have been left for these. In any case, repainting the walls in HR4 before boring holes for the air-conditioning and then re-repainting them was plain blindness. Speaking of repainting walls, the current offices of the faculty which used to be hostel rooms have one brightly (and arbitrarily) coloured wall at the entrance. Other than aesthetics (quite subjective at that) this provides no apparent advantage.

Splurging on residences seems to be the trend at IISER currently. However, in defence, the scores of Nilkamal plastic chairs that were installed in the rooms of a few floors, before the actual order of better quality Godrej chairs arrived, provided the advantage of convenience over the colossal wastage of money.

Another bright way of wasteful resource use is demonstrated by the motion-sensing lights that blink on at the oddest of times when you walk past. Interspersed with lights that are permanently switched on, they reduce the electricity bill not even by a penny and only provide entertainment to geeks who experiment on the mechanism and range of motion sensing.

The Electricity Board would have profitted less out of IISER money had the plans for the buildings been so that more natural light entered the rooms. Living in an inward-facing room on the 8th floor of a sophisticated, well-tiled, amply furnished and regularly cleaned (as if by miracle) hostel and yet constantly feeling stuffy, one can only imagine the plight of the dungeon-dwellers. Right when these poor souls get accustomed to the dimly lit surroundings and bravely venture out on to the roads, their retinae are stabbed by the flash of several non-neon lights that illuminate the dusty main road. Instead of simply replacing the dim bulbs by brighter and whiter ones, new street lights have been erected that stand unnaturally tall and dwarf the tallest among us.

Oddly, the thrifty alter-ego of the admin surfaces in the queerest of situations causing them to cancel the previous order of curtains for the rooms and concentrating redundantly on two study lamps per room. Obvious as it may be to the author, the redundancy of the two lamps is visible in the fact that in case both the roommates

> "Another bright way of wasteful resource use is demonstrated by the motion-sensing lights that blink on at the oddest of times when you walk past ."

are in the room, the wall light can be used!

Switching off the lamps and rushing to climb on to an unused, otherwise empty bus wantonly burning diesel due to no other fault than a poorly designed schedule, one finds that the Sai Trinity campus is not saved from the perils of capitalism either. Budgets will be overshot by miles just by reprinting transcripts for hundreds of students for an average of four semesters, if the O grade system gets reverted as the Director has suggested.

The worst case of garish spending is seen in the undergrad Chem lab, where at least half a dozen laminar hoods lie unused. These are put to use only for storage of chemicals under their hoods, for lack of space elsewhere. Out of these, two work, perhaps, and they bear testimony to the lakhs of rupees rotting under bureaucracy and the lakhs that would have to be spent to get them working again in the future.

Little does one know how many other such machines gather dust and serve as book and coffee-mug holders in various other labs! The interim shifting of the theoreticians to HR4 and the spread of the Bio faculty all over Sai Trinity is also a poorly justified move as all the shifting could have been done simultaneously once the Bio Laboratory block became habitable. Does a couple of months of increment in space justify the risk of data loss and the sheer amount of manpower required?

Temporary solutions have been provided time and again, everywhere from the lowest to highest priority problems at IISER.

Many events, like Science Day and Foundation Day have witnessed frantic fake-lawn-laying to fake-steel-grey-strip-covering on the pillars. Much of these do not add value to any of our lives, especially the steel-grey durable, flexible coats on the pillars (which the Chief Engineer clarified to be Aluminium Composite Panelling). Beyond strengthening IISER's bonds with Hindalco or some such company and leaving a nagging doubt about its purpose on IISER minds, they have been useless whatsoever.

A few makeshift solutions have actually benefitted the population though. The extravagance at the proposed 'lesser' gate of the campus, making it comparable to the entrance to a Victorian Lord's mansion, has definitely put IISER on the map especially with autorickshaw and bus drivers but it is quite unnecessary. And perhaps the periodic removal and recreation of the pandal during IPL was in fact the easier way to go about things. There must have been reasons, surely; Reasons that provoked the shifting of the position of the cricket ground from the original location where many faculty windows would have been prone to destruction. It is sensible to let sleeping pitches lie as fewer panes are vulnerable as of now.

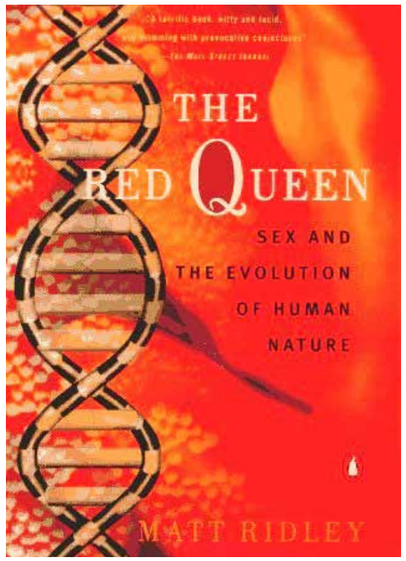
Even after years, quite into the distant future, the students will still manage not to ever permanently reach that distant oasis, plagued by bankruptcy and Xeno's (or the Americanised Zeno's) paradox. By this paradox, to reach the oasis one has to reach halfway; to reach halfway, one quarter of the way and so on to infinity. Since this describes an infinite number of tasks to be completed, it is an impossiblity.

Despite living in that ideal world where grades have been rectified, cricket pitches have been built and curtains provided, a student will still grumble, crib and view the administration with biased eyes. Ultimately, that is the grand scheme of things.

Disclaimer: The facts that required clarification have been verified through personal interviews of the authorities concerned. To maintain confidentiality and discretion, they chose to remain anonymous and off-the-record.

The Red Queen

Sahana Srivathsa



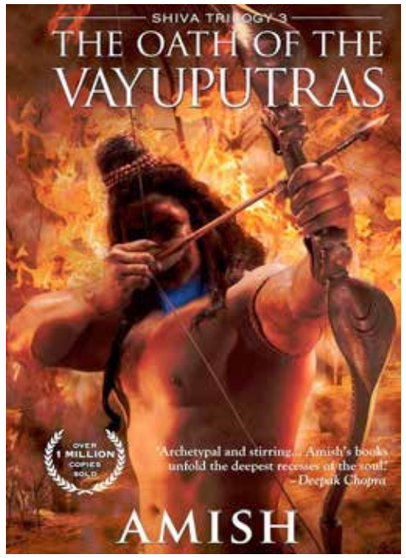
This book is about the one word which runs through the minds of half of IISER's student population at least once a day and is the basis of every other joke cracked. 'It' causes scandals, murder, can tear families apart, and instigates innumerable controversies and riots by almost every exisiting religious group. Yet, somehow, this three letter word is responsible for the presence of almost every individual on this planet: S-E-X! It is the fundamental and primitive urge of every human, which guides all our decisions. But why was sex even introduced in a world initially consisting of organisms which reproduced asexually and didn't have to face the hassle of finding a suitable and willing mate to ensure the continuity of their genes?

While human nature seems to be an intricate network with capricious choices, most of our actions are fairly predictable and governed by our evolutionary history. The journey, from the origins of evolution, where the prey evolves to acquire an advantage over its predator, to the rationalisation of the so called 'human intellect' is described in this engrossing novel by Matt Ridley, author of 'Genome'.

In the first few chapters, Ridley demolishes our preconceived notions about the advantages of sex, by presenting stunning data compiled from the research and observations of many scientists, and this is portrayed using countless examples and anecdotes. The term 'Red Queen' was coined after a chess piece that Alice, from the book 'Through the Looking-Glass', meets, who keeps running but never progresses anywhere as the landscape moves with her. This is compared to the intertwined evolution of two species, prey and predator. Fundamental queries such as the presence and necessity of two sexes in humans, when microorganisms such as rotifers have comfortably led a single gender existence for millions of years, are addressed. Highly controversial topics such as the inherently higher tendency of men to favour polygamy and commit adultery as compared to women, are brilliantly argued with credible facts and entertaining tales. Ridley has one contemplating about their true motives behind every action, from wanting to ace a test to being attracted to a beautiful girl, and continues to boggle your mind with the outcome, for days on end.

The Oath Of The Vayuputras

Sujay Balebail



'The Oath of the Vayuputras' is the third book in the very popular Shiva Trilogy by author Amish Tripathi. The first two books, 'The Immortals of Meluha' and 'The Secrets of the Nagas', were enthralling. Although there were huge expectations riding on the third book, it does not provide as much excitement and drama as the first two books. However, it is still a good read.

In the Naga capital, Panchavati, Shiva finally discovers what 'Evil' is. He finds out the identity of his true enemy and prepares for a holy war against him. A number of battles are fought for the nation. But Shiva cannot afford to fail. In desperation, Neelkanth reaches out to the ones who have never offered him any help, the Vayuputras.

Does he succeed? What is the cost of battling true evil on India and on Shiva's soul? The answers to these questions are revealed in the book.

Amish's writing style is simple, lucid and clear, just like in the first two books. It makes for an easy read. Shiva engages in a number of philosophical debates and discussions. Not only are these discussions interesting, but they also provide valuable messages which can influence our outlook towards life. Amish has devoted more space to philosophy in this book in comparison to the first two books.

Although the first three-quarters are very engrossing, the climax can be a bit of a disappointment. Amish has tried his best to explain the current mythological beliefs about Shiva, Sati, Ganesh, Kartik, and some other characters in the story, but it does not live up to the readers' expectations. However, I would strongly recommend this book for all those who have read and liked the first two books of the trilogy.

EXPRESSION

Muhammad bin Tough-luck!

The Lion, The Witch, and The Wardrobe

In the wake of India's toughest Science challenge, Mimamsa, IISER's online publicity and blogging forums were visited by a regal, almost mythical, entity. The Mimamsa team was surprised to see the Facebook projection of Muhammad bin Tughlaq (or his spirit) answering the Chemistry questions, quite badly at that. Suddenly thrown out of their seats, the bloggers sat back, quickly brushed through seventh standard History textbooks prescribed by the CBSE, only to be thrown off once again. Had time turned around? Had it spun a full circle? Had Mohammed come to the (dry, black marble) fountain or had the fountain come to Mohammed?

As the astute and contextually well-read bloggers narrated their findings to the authors, the smell of moth balls drifted in the air as tapestries unravelled and historical characters popped to life, much as if they had been around forever, at least since 2006. As a tribute to those warriors who shrieked in joy after their last history exam, we narrate this tale that will strike many chords and ring many bells.

Muhammad bin Tughlaq is a name that is synonymous with brilliant yet failed plans, well-meant but badly executed policies and a boomerang of a life, much like many present-day administrators. He was the Sultan of the Turkish Tughlaq dynasty from 1325 to 1351. He was a brilliant man but a poor administrator, proficient in Science, Mathematics and even calligraphy (unlike doctors). During his rule, he was known to be a ruthless man in matters of justice, rewarding cruel punishments for even trivial crimes. Disciplinary matters like spilling liquid in public places were harshly dealt with. This might lead one to assume that all was sunny in the Sultanate under his iron grip but it was not to be so. Ill-timing and terrible fate brought his rule under much mockery and upon him, the popular nickname, 'The Wise Fool'. His friends on Facebook now call him TWF.

In his young and carefree days, he led a successful campaign to the south of the country and, as any respectful son of a Sultan, he returned with tons of plunder. Gold, pure gold. This might have been the cause for The Great Migration of Southerners, especially from the Malabar Coast, to the capital, in search of an income. The protagonist would then pass on his throne, crown and regalia to his son and right-hand man, Feroze Shah Tughlaq. This young Tughlaq would grow up to be

> "Muhammad bin Tughlaq is a name that is synonymous with brilliant yet failed plans, well-meant but badly executed policies and a boomerang of a life, much like many present-day administrators."

a caring ruler who understood the problems of his subjects and the development of the state. However, due to the lack of a strong military and weak laws, power would soon fall into the hands of the nobility and the Sultanate would lose its stronghold in the administration.

And then, in 1334, from across many seas, a lonely traveller dropped anchor on the shores of the vast empire. This beacon of hope was none other than the prestigious Moroccan traveller, Ibn Battuta. Owing to his proficiency in matters of state, he served as the Qazi of the court for eight years. This versatile personality adorned the court for many days, literally juggling exploration, political studies and travel writing. The authors believe that he would have mastered the arts of the hoop-la and the unicycle had they existed during that period. While in the court, he compiled a collection of writings on the contemporary Indian scene titled '*Safarnamah*' and many other lighter ones which can be found online at diaryofanamericanindian.blogspot.in.

Endearing travellers, however, did not lift the status of Tughlaq's administration in the eyes of critics. His spell of bad decisions cascaded with the increase in taxes to sustain a large army for conquests. As any hike in dues would, this move angered the public and sparked a rebellion which was successfully supressed by the administration. One folly foaled another with the issue of new token coins in brass and copper from silver. The replicas of these are still being used in the IISER canteen to buy microscopic amounts of coffee. These clinking (beeping?) keys to a regular citizen's daily meal were meant to facilitate accounting but it only led to citizens finding loopholes and embezzling the money in the process. Mints sprung up in every street and forged coins grew on trees. The Tughlaq's ancestors turned in their graves.

The Wise Fool's fatal error was the shifting of the capital from the ancient city of Delhi, replete with gardens, aquaria (minus the mermaids) and many Centres for Excellence, to the modern city Deogiri which he renamed as Daulatabad. This move was in favour of easier administration of his fast-expanding empire. Daulatabad, the capital-to-be, was built almost from scratch to suit capitalistic needs with magnificent buildings in contemporary styles while many other aspects of life in the kingdom were neglected to the point of decay. This gargantuan move entailed the shifting of thousands of civil servants, their official paraphernalia and huge amounts of transport. The move caused uncountable (data) losses in transit and a state of utter chaos which led to a positive selection pressure on advanced mathematicians and physicists in the subcontinent. Consequently, the Theory of Parallel Universes was put forth.

In a parallel universe, who knows, we may have lived in the time of this Wise Fool and things wouldn't have seemed drastically different, save a shift of frame. History repeats, not periodically but randomly and with surprising exactitude. In the words of Tolkien, "The crownless again shall be king".

For drawing your own parallels and for hardcore facts, grab a pencil and visit:

http://en.wikipedia.org/wiki/Muhammad_bin_Tughluq
http://www.mapsofindia.com
http://www.indohistory.com
Memories from Class 7 NCERT History Textbooks

XPRESSION

Where's Your Coffee Bean?

Krishna A and Avani G

A whiff in the air; your head comes up; ears perk up; eyes brighten; and as you race to the cafeteria with the nimbleness of a mountain goat, you bless the goat-loving Arabian who discovered coffee (no aspersion intended on that noble personage).

The day that the Café Coffee Day dispensing machine was installed at the Sai Trinity cafeteria was one of the happiest in IISER's collective memory. No more gut-churning concoctions in the mess! But shocking recent events, namely the hike in coffee prices right at the eve of the mid-semester examinations, have set off shockwaves across the student body. The timing could not have been worse. The air is choked with bitter animadversions on the daylight robbery that 'the mess guys' have engaged in, but the Authors must take issue with this. The most cursory thought shows that no less than 2 packs of CCD coffee beans are used per day (plenty of witnesses); each one does costs around ₹600 (statement from the authorities), and given that the number of coffee cups sold is around 200 a day (courtesy: Prutha), the cost per cup ~ 1200/200 = ₹6. And this does not take into account the luxuries of sugar, milk, cups, transport, electricity, the rent of the machine itself and any profit margin that they intend to make. Coupled with the convenience of having delicious coffee right at our backdoor, ₹8 is not unreasonable.

But do the students really care about the quality? The professors might shriek and/or faint at the thought of less-than-stellar coffee; we are not so picky (it probably explains the sub-standard Science that we do). Plenty of caffeine is the only requirement that we have, one that the hostel coffee machine miserably fails at. Not only is it minute quantities of a watery, oversweet, muddy-hued liquid, appallingly liable to be confused with tea, it costs a cool ₹6, which is grossly out of proportion. Is there no middle ground?

Since the argument most likely to appeal to scientists is the rational approach (apart from Molotov cocktails; it's hard to argue with them), the battle must be waged with numbers. We look at possible solutions. We look at the common-garden filter coffee, beloved of the Cape Comorinarians, and readily available.

A few mad souls carried out elaborate experimentation (methods available on request) to figure out the actual costs of brewing a cup of decent coffee, or objectively, a cup at par with the one serving of CCD espresso. The volume of espresso served in a cup of the CCD coffee is measured to be 70 mL. To make the same amount, we need 5 level tablespoons of coffee powder, or 5g. This value was obtained in the above-mentioned experiment by varying the concentrations from a stock solution over a range of 4.2 to 6g, and observing that 5g undoubtedly tastes the closest to the CCD version. We also carried out colour and consistency comparisons (qualitative) between the espresso and the filter coffee to confirm the findings independent from our taste buds, and the 5g concentration won hands down. A 100g of the (Narasu's pure) filter coffee costs around ₹40; a tablespoon ~ 1 gram, so a cup of filter coffee costs around 0.4*5 = ₹2! Adding costs for the sugar, the milk, the cup, etc., it would only go up so far as ₹4. The current coffee price is therefore 100% more than the maximum obtained by minimalist methods. The CCD e-shop offers filter coffee powder for sale at ₹150-170 per 400g. Narasu's coffee used for experimentation works out to be ₹160 for 400g showing that our estimates are not totally off the mark even accounting for brand value. Considering the inflation rates, the price hike will not be so significant. The Authors do not wish to criticise, they only seek to demonstrate that it is possible to brew much cheaper coffee on your own.

Many names shall be plated in gold and many a soul shall see the portals of heaven if some such coffee arrangement is made in the hostel campus, both adequately strong (read addictive) and affordable. With the information at hand, it can be predicted that this would increase the frequency and quality of undergrad research publishing.

Foodie Corner

Chaitanya Afle

If you are a die-hard American cuisine fan, Peter's Pan is one good place. Note that it is one of the very few restaurants in Pune to offer waffles and pancakes as their USPs, and serve breakfast all day! They also have a variety of vegetarian as well as non-vegetarian dishes such as pastas, pizzas, hotdogs, and burgers. The dishes that we tried were very tasty. However, the place does not give the quantity worth the price.

Pastas have the exact balance of cheese and spices that one wants. The thin crust pizza is perfectly crisp and of perfect thickness, though the toppings could have been cheesier. Waffles and pancakes come with many kinds of syrups: chocolate, blueberry, caramel, etc. They also serve the classic Belgian Waffle. However, the maple syrup that comes along with it is quite insufficient for the whole cake.

On top of all of that, the Chocolate Waffle is an absolute delight! Add whipped cream on it and you'll smile all the way home. Even the Irish Milkshake is very popular.

The ambience is good. The crowd is decent. The restaurant is air conditioned and has two floors - so no standing and waiting for people to finish their food. The staff is somewhat fewer than required to cope with the weekend crowd, hence service is slow.

But you will get the best chocolate waffles here, outside of Neverland.

To get to Peter's Pan, take a bus that takes you to Deccan, get off at Rahul Theatre, take a right turn and keep walking till you see their bright purple board to your left. (Hint: It is right next to Chaitanya Paranthas)

It is located at No. 1 & 3, Chanakya Puri, Opp. Fergusson College Gate No. 2, Next to Gnyaneshwar Paduka Chowk, Fergusson College Road, Shivaji Nagar, Pune.

If you find yourself lost, call them up at 9226119693 or 02041464108.