

QUARKS

Fundamentally Unique. Fundamentally Different.



QUARKS

Editorial Team:

Coordinators: Milind Hegde, Rhine Samajdar.
Members: Ankush Sood, Aravind Rao Karanam, Atul Sharma, Harsha Gurnani, Medha Shekhar, Naren Manjunath, Pranav Kantroo, Rohit Chatterjee, Sahana D. Rao, Shriya Pai, Siddharth Kankaria, Sridevi V., Sriram Chandramouli, Subbulakshmi S., Subhayan Sahu, Suhas M.

Design Team:

Coordinator: Kanad Ghosh
Members: Anshuman Swain, Malla Sai Prathyusha, Milind Hegde, Pavan Malagimani, Shashank H. R.

Photography Team:

Coordinator: Siddharth Kankaria
Members: Abhinav Jain, Abhinav Maurya, Anuva Aishwarya, Sasank Amavarapu, Mukund Seethamraju, Utkarsh Vijay, Vamsi Krishna K.V.

Arts Team:

Coordinator: Richa Naja Jain
Members: Anshuman Swain, Anuva Aishwarya, Atreya Dey, Mipham Gyari, Shinjini Biswas, Tanmoy Pal.

Events and Management Team:

Coordinator: Kaivalya Molugu
Members: Balaji Venkat, Kolhatkar Sampada C., Moshir Harsh, R. Srinath

Digitizing Team:

Coordinator: Vikas Jangid
Members: Arvind Mehra, Vivek Gupta

Representatives: Arka Pal, Athmanathan Senthilnathan, Hans George Kaliaden, Navasree Surendran, Raghav Malhotra, Sushant Bangru.

The QUARKS team would like to thank Amogh Kinikar and Sri Vamsi Matta for their active contributions.



The Dean's Ink

It gives me great pleasure to introduce to you the third volume of "QUARKS", the magazine brought out by the students enrolled in the undergraduate program of IISc. We now have about 425 students in the undergraduate program. The first batch of students who joined in 2011 are now in the fourth year of the program and a new batch joined very recently. These students are performing very well academically and also pursuing various co-curricular activities. They have integrated quite well with the larger community of Masters and PhD students of the Institute and are contributing substantially in the social, cultural and recreational activities in the campus. All of us are favorably impressed by the curiosity, intellectual ability and enthusiasm of these young students.

The artistic and literary qualities of the first two volumes of QUARKS were highly appreciated by all readers. The third volume promises to be even better, since a larger number of talented students have contributed to it. I expect that this magazine will provide ample evidence of the creativity of our undergraduate students. The third volume also contains several exclusively-written stories based on the theme of undergraduate life at IISc. I am sure that you will enjoy reading this magazine. It will also make you more familiar with the undergraduate program and the students enrolled in it.

Happy reading!

A handwritten signature in black ink, appearing to read "Chanda Darshak".

From the Editorial Desk



As my mind deliberates on the quagmire of whether it is nostalgia or contentment with which I look back upon the year gone by, I am reminded of the poignant words of the mystic Paulo Coelho—“*You can become blind by seeing each day as a similar one. Each day is different, each day brings a miracle of its own. It's just a matter of paying attention to this miracle.*” At Quarks, we celebrate the miracles that encompass our daily lives and the myriad delights that inconspicuously manifest themselves every day.

Ruminations pondering over the relevance of an undergraduate magazine would present two apparently irreconcilable perspectives. In its purportedly traditional capacity, a magazine would serve as a chronicle of time in its incessant passage—a meticulous record of our lives as university students. Susan Sarandon precisely lends voice to my contemplations in ‘Shall We Dance’ when she remarks that “*we need a witness to our lives. There's a billion people on the planet ... I mean, what does anyone's life really mean?*” However, in order for a magazine to truly transcend the confines imposed by its etymological origins from *makzin*, Arabic for storehouse, the receptacle must move beyond the role of the archivist and lend itself as a conduit for opinions and imaginations.

The memoirs of a certain individual, while seeking to illuminate the *raison d'être* for the song of the caged bird, recount that “*there is no greater agony than bearing an untold story inside you.*” Undeniably, there is a story inside every person waiting to be communicated, “*for thought is a bird of space, that in a cage of words may indeed unfold its wings.*” Adherence to this belief is therefore what underlies Quarks’ proclivity to listen to these oft unheard narratives and share these expressions of personal emotions with the reader in our three sections—*Musings of a Wandering Mind, Melancholia and Life, Death and In-between.* “*No live organism can continue for long to exist sanely under conditions of absolute reality,*” and the attempts to escape therefrom and seek solace in a place without walls has been captured in the section suggestively titled *Unreal Quarks*. The pang of separation from home is only too familiar to the hearts of students, which resonate with the words of prophet Almustafa as he departed from the city of Orphalese after twelve years

in its midst—“*How shall I go in peace and without sorrow? Nay, not without a wound in the spirit shall I leave this city.*” However, despite the distance of a thousand miles from our individual families, Quarks pays its tributes to the spirit of *A Home Away from Home*, in the tranquil campus of the Indian Institute of Science, with a collection of expositions on the menagerie of multifarious activities and the camaraderie that binds us all together with the thread of friendship. From the celebration of Pravega to research in the laboratory, the quantum life of an undergraduate student, as depicted on the cover of this volume, is indeed a linear superposition of studiousness and recreation, a juxtaposition of serious responsibility and exhilarating freedom—much akin to the proverbial feline of Schrödinger fame.

Since its naissance two years ago, Quarks has had the privilege of receiving the guidance of our Honourable Director and we would like to not only thank the outgoing Director, Professor P. Balaram, for his unwavering support but also extend a warm welcome to our new Director, Professor Anurag Kumar. On behalf of the Quarks team, I would also like to express our gratitude to the Chairman of the Archives and Publication Cell, Professor T. A. Abinandanan and the members thereof. I would be at fault for ingratitude if I failed to convey our appreciation to the Dean of the Undergraduate Programme, Professor Chandan Dasgupta, for his unvarying encouragement; to all the members, professors and students, of the Undergraduate department without whose conviction and dedication, the metamorphosis of Quarks from embryonic vision to mature reality would have been unfeasible; and most importantly, to all the team members who had the faith to give me the opportunity to participate in this process alongside all of them.

As my association with Quarks over a period of two years draws to a close, I am humbled by the verity of the fact that life is not static—“The woods decay, the woods decay and fall, The vapours weep their burthen to the ground” and people change, as do their ambitions and dreams, visions and aspirations. The road thus far has been long and arduous and from a personal perspective, the journey itself has been the destination; hence, closure is what brings succour to the somnolent traveller. The conclusion to our story may not be perfect, but then again, no ending ever is; some poems do not rhyme. Articulating our sincere hope that you enjoy reading this volume of Quarks, I leave it upon Kahlil Gibran’s timeless verse to remind you that Quarks is but one avenue of expressing the kaleidoscopic beauty of inspiration that resides within your very self:

*“The hidden well-spring of your soul must needs rise and run murmuring to the sea;
And the treasure of your infinite depths would be revealed to your eyes.
But let there be no scales to weigh your unknown treasure;
And seek not the depths of your knowledge with staff or sounding line.
For self is a sea boundless and measureless.”*

Yours sincerely,
Rhine Samajdar,
Editorial Team Coordinator.

Editor's Words

Milind Hegde
Editorial Team Coordinator

This is my second time as an editor of Quarks, and the experience hasn't changed much—which is to say that it was as great and memorable this time around as it was last year. Quarks is, along with Pravega, one of the only efforts of the undergraduate community here at IISc which brings together the entire community in one form or another. The process has been going strong for three years now, and it has once again resulted in a finished product that we can all be proud of and call our own. To me, this is one of the most important joys of the work—a chance to work with friends and batchmates to create something original and imaginative, which can be touched and cherished down the line as well.

I am very pleased with the articles we have in Quarks this year—especially those which grew out of interesting ideas of the team's newest members, such as Getting to Know Your Aam Admi. Another notable piece is the feature on Pravega '14, which, as IISc UG's first major interaction with the rest of the country's undergraduate scene, has been chronicled more or less exclusively by Quarks, both through the newsletter Pravega Digest as well as through this volume's piece.

There were also some new challenges this year that the entire team had to deal with—with perhaps the largest among them being the need to coordinate across continents this time instead of states, as many members of the team went abroad for internships and summer projects. The team was spread across India (Mumbai, Bangalore, Kolkata, for the most part) and Europe (mainly Germany and the Netherlands). Nevertheless, we soon adapted to the new situation, and I think we've made the most of it in strengthening our bonds and trust.

Although in writing an editor's job appears to just be a form of curation and proof-reading, in reality there's a lot more to it. You must also have an idea of design and whether it fits the theme of the piece you have in mind, managerial skills to help people accomplish the requirements, and a vision for the magazine as a whole to bring it all together. Not that the abilities can't be distributed across the whole team!

All in all, Quarks is here again in your hands, a result of much hard work and toil not visible through the pages. As a reader you are already a part of Quarks—but, as in science, there is always a deeper level, and we wait for you to join us there next year!

Designer's Sketch

Kanad Ghosh
Design Team Coordinator

Designing has always been an integral part of me. Be it for professional use or just for mirth, it has never failed to bring me happiness. However, to be completely honest, when first designated as the Designing Coordinator for Quarks, I was rather shocked at the faith of all my colleagues in me to pull this off when I hardly had any faith in me myself. In any case, it was an opportunity to take my experience and skill to another level, and what better contribution could I make to the magazine than with my favorite hobby?

Now we all know that a single leaf can't make a tree, much less a forest ... So after careful thought and a few reluctant rejections, the Designing team had finally taken shape. Armed with vibrant ideas, skilled vector artists, digital art specialists and dedicated hard workers, I couldn't be more proud of my group.

As the deadline approached steadily, months turning to weeks and weeks to days, our work became exponentially tougher and demanding. The deluge of poems, articles, cover stories and interviews were piling up faster than our workforce could complete. Giving each piece of work the design and unique show it deserves and interweaving the articles with perfectly apt pictures was no child's play. To top it off, the summer vacations had confronted the team with a scarcity of available members. Nevertheless, frequent phone calls, never-ending stings of mails, constant exchange of pictures on WhatsApp and design works redone 6 to 7 times has paid off well.

One of the greatest challenges the team faced was to come up with the idea for the cover design and then to actually implement it. Fortunately, we didn't tackle the task alone—with help from editorial, photography, and management, beginning with the very early stages of brainstorming, and continuing till the final stages of photographing and fine-tuning the design, we were able to come up with a truly original creation that represents both Quarks and the undergraduate community perfectly.

I was pleasantly surprised by the many new people I got to know better, the new friendships formed, and the old connections that were strengthened. There is nothing like working on a grand project where everyone's contribution is crucial to bring people together. Everything has its crests and troughs, and like all successful groups we had our fights and jokes, tears and laughter, frustrations and appreciations and at the end of the day I can safely claim ...

"One for all ... And all for one."

Photographer's Limn

Siddharth Kankaria

Photography Team Coordinator

The Photography Team at Quarks has always tried to approach every photograph with an ideology best summed up in Ansel Adams' words that "*there are always two people in every picture: the photographer and the viewer.*" During every photographic assignment that we received, we had to constantly fight with these two 'sometimes aligned, sometimes antagonized' viewpoints inside our heads—of whether to conform to the (would-be) viewer's perspective while clicking a photograph or rather adhere to our personal notions of aesthetics—and this has honestly turned out to be big challenge for us. However, eventually, what we almost always ended up doing was to conform to the Design team's '*artistic sensibilities!*'

Finding interesting perspectives through our viewfinders for various literary entries and cover stories in *Quarks*, irrespective of whether we already had a concept in mind or whether we were required to experiment and innovate in the *field*, turned out to be equally tiring and stimulating for us. Articles like *Getting to Know Your Aam Aadmi*, *Interview of Professor Anurag Kumar*, and *Midnight Crisis* required more or less conventional approaches to photography, while articles like *Swarth Ke Darbaar*, *Nenapu*, and *Betiyaan* required us to search for old photographs already in our possession. On the other hand, articles like *The History of the Old Physics Building*, *The Bicycle Baba*, and most importantly the photographs for the cover page required much more brainstorming and creative approaches than we had previously anticipated. Although most of our work revolved around clicking photographs to supplement the various articles, stories and poems in *Quarks*, most members also got an opportunity to bring out the freelancer in them, by contributing to a selection of photographs clicked by the UG community. Not only did all of these photographs possess a touch of humanity and realism, but they also had a distinct, yet understated, layer of conceptualisation going into composing them. This perfect blend of realism and vision is precisely what sets apart a good photograph from an average one.

On a more personal note, my journey with *Quarks* since the last two years, as a member of both the Editorial and Photography teams, has been nothing short of a whirlwind ride. My experience as a part of the Editorial team, wherein I could freely write, meticulously edit, carefully proofread, creatively conceptualize, and most importantly, calmly comprehend the subtle nuances of word play, has been as fascinating as my experience in the Photography team, wherein I could drench myself in the untamed energy and instantaneous verve of *living in the moment*, every time I was out there capturing that *slice of light, in time* forever. After these two years, I have come to the conclusion that both writing and photography have an enigmatic charm about themselves, which cannot be compared to each other. As I write this piece, I feel myself strangely endeared to the saying that "*let your words be few, and your exposures many.*"

Before I leave you all to enjoy this new edition of *Quarks* before you, I would just like to give all the readers this one *mantra*:

"Eyes like a shutter, mind like a lens!"

Artist's Strokes

ऋचा जैन
कला विभाग समन्वयक

इस संसार में मनुष्य के समक्ष अपने विचारों को प्रकट करने के लिए कई प्रत्यक्ष-अप्रत्यक्ष माध्यम हैं। कोई कलम से इन्हें ज़ाहिर करता है, तो कोई काव्य रस में भिंगोकर प्रस्तुत करता है, और हम जैसे कुछ कलाकार रंगों और कुची से अपनी कल्पनाओं को व्यक्त करने की प्रतिभा रखते हैं। कभी-कभी यदि अक्षरों और शब्दों से गुंथी माला को सुलझाना जटिल लगे, तो चित्र, रंग, आकृति या कागज पर उकेरी गयी सरल रेखाएँ, विचारों की अभिव्यक्ति को अत्यंत आसान बना देती हैं। अतः विचारों की श्रृंखला निर्मित करने में गद्य और पद्य के साथ जुड़ने वाली कला भी महत्वपूर्ण कड़ी होती है।

यहाँ इस पत्रिका में विचरण करते हुये समय-समय पर आपकी भेंट भी इन्हीं कुछ नवीन, सराहनीय तथा मनमोहक कलाकृतियों से होगी। इन रंगों से सजी भावना और कल्पना के प्रयोगों ने पत्रिका के लावण्य एवं महत्ता की स्थापना में भरपूर सहयोग दिया है। मैं मेरे समस्त स्नातक कार्यक्रम के सहपाठियों तथा उन युवा कलाकारों को धन्यवाद देना चाहूँगी जिन्होंने, इस पत्रिका के तृतीय संस्करण के सफल प्रकाशन में उत्साहवर्धक योगदान प्रदान किया। मैं आशा करती हूँ कि हमारा ये प्रयास पाठकगण के लिये भी अनुरूप, रोचक एवं आनंददायक होगा।

Manager's Outlook

Kaivalya Molugu
Events and Management Team Coordinator

If you thought that the UG students of IISc were just confined to academics, you have been mistaken. We, the UGs, have been actively involved in various other activities in addition to our academic activities, be it conducting the Science, Tech and Cultural fest—Pravega, the first and largest of its kind in India—the establishment of new clubs like the UG Journal Club or taking part in various sports and cultural activities on and off campus. We don't hesitate in voicing our opinions on issues of concern like the mess bill increment and the PhD students' stipend hike. We never take a step back in making ourselves heard. As many on the campus opine, we breathe life into our campus with all our activities.

While the Events component of our team has tried to capture this spirit of diverse activities and achievements of the UG students so as to enable our readers get a feel for UG life, the Management division has worked towards bringing this magazine to life, i.e. taking care of funds and printing the magazine. The Management team is extremely thankful for the invaluable and timely support of our outgoing Director, Professor P. Balaram, the Chairman of the Archives and Publication Cell (APC), Professor T. A. Abinandanan and the members of the APC who have helped our team sail through all the odds and enabled us to present to you the third edition of Quarks that you're embracing right now.

Working for Quarks has been an extremely memorable journey for me. Though all of us coordinators, had started working with our teams independently at the initial stages, we had to collaborate on all of our efforts at the last leg. We had numerous brainstorming sessions for the same, filled with ingenious ideas, heated arguments, prolific discussions, heartbreaking compromises and some light-hearted moments too. There were times when we would be so engrossed in our discussions that we would lose track of time and food. If not for these sessions, we would not be able to track down the glitches, act on them accordingly and present this magazine to you on time.

I'm sure that all of us have learnt a lot during this journey of Quarks: be it learning how to negotiate with people, keeping ourselves motivated at crises times, being patient or many priceless lessons of management. All of us have had our share of ups and downs during the process of developing this magazine; nevertheless, we have completely enjoyed and cherished every moment that we have spent towards bringing this magazine to life. We hope that you appreciate the efforts that went into making this volume of Quarks and enjoy reading it!

Digitizer's Type

Vikas Jangid
Digitizing Team Coordinator



Digitizing, as the name itself reflects, is something interesting as well as challenging. Technically speaking, digitizing would be a process of converting information into a digital format. However, here, working with Quarks I realized that it means pouring someone's emotions, creativity, ideas and viewpoints into a digital copy and enabling the readers to directly connect to our authors. As the coordinator of the department, I may be biased towards digitizing, but I must say that it is the backbone of Quarks as converting the literary pieces into a digital copy is a crucial as well as cumbersome job.

Digitizing may look like an easy and monotonous job, as one may think that it is just about typing stuff, but believe me, it is equally challenging and interesting as the five other responsibilities in Quarks. Learning new software for languages other than English and then digitizing them was a demanding task. Nevertheless, it was indeed fun cracking the author's puzzling handwriting and conveying what they exactly want to say.

It would never have been possible for me without the constant efforts of my team members, Arvind and Vivek (yes, we had a small team) and guidance from the former coordinator of this clan, Sasank Amavarapu. In a nutshell, we enjoyed and cherished being a part of this magazine and working for it and I am proud to say that we were the link between the electronic media and hardcopy for our one and only IISc UG magazine—Quarks.

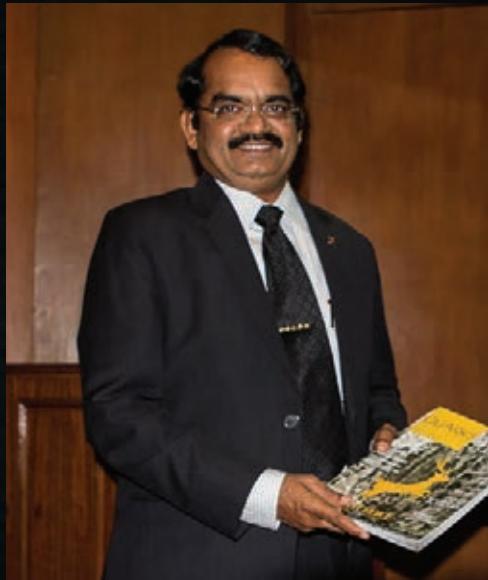
Nobel Laureate, Dr. Venkatraman Ramakrishnan, with the Dean



“The production values were very high; this is really the best production values that I have seen for an undergraduate magazine of this kind in any of the institutions I have been associated with, back from my undergraduate days to the University of Wisconsin where I was a PhD or even the University of Michigan where I was a visiting assistant professor.”

-Professor Gautam Bharali, Mathematics Department

Program Director for IRSASSS, Dr. Mysimamby Annadurai.

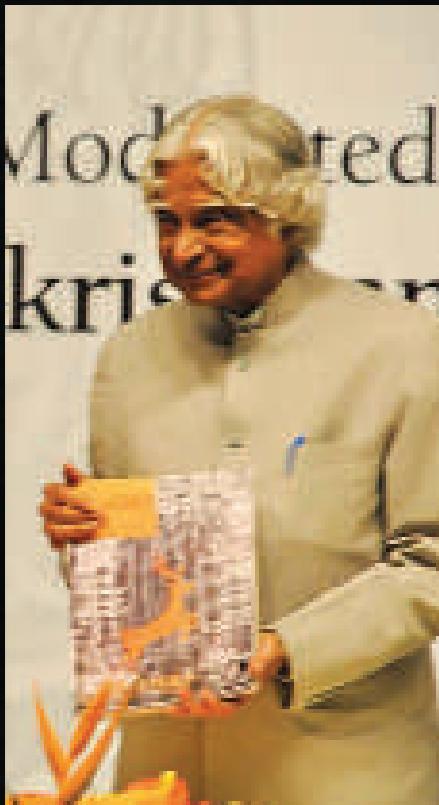


“I really enjoyed the articles ‘Adventures of a Gastronaut’ and ‘The Major Decision’—especially to read the senior batch’s thoughts. The whole magazine is excellent, and of very high quality. The editing is outstanding and the end product is remarkably free of typos and errors of any sort!”

- Professor Manjunath Krishnapur, Mathematics Department

Your Thoughts

Former President of India, Dr. A. P. J. Abdul Kalam.



“It was good and creative and written from a different perspective. You guys are very young and keep it going!”

- Professor Dipankar Nandi, Department of Biochemistry

His Excellency, Mr. François Richier, Ambassador Extraordinary and Plenipotentiary of France to India, with the Dean.



THIS ISSUE

18 — The Musings of A Wandering Mind

34 — Unreal Quarks

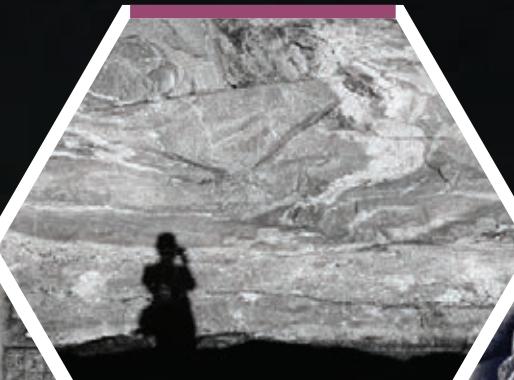
44 — Pravega

82 — A Home Away from Home

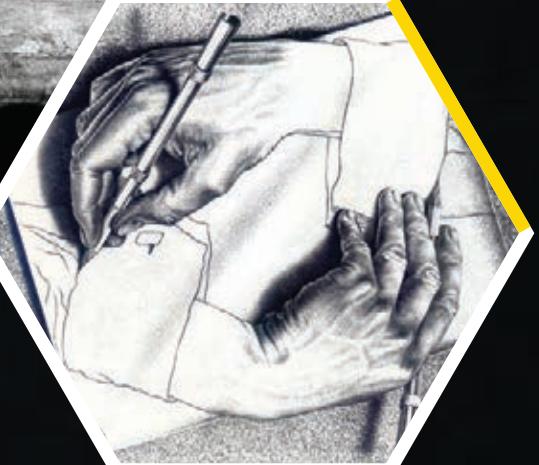
152 — Life, Death and In-Between

162 — Melancholia

18



34



162



44



152



82





The Musings
of a
Wandering Mind

I

-
- | | |
|----|--------------------|
| 6 | Bloom |
| 17 | ନୂଇତପବୀଯା ଡେକାବୀର୍ |
| 18 | A Desire to Rain |
| 21 | स्वार्थ के दरबार |
| 22 | बेटियाँ |
| 24 | उड़ जाने दो मुझे |
| 25 | इंसान |
| 26 | Butterfly |
| 28 | ହାଇକ୍ |

Bloom

Anshuman Swain

*It was damp. It was cold. It was rather a story untold...
Across the blackened frames of sky, with the diamonds of life sparkling by
The dunes that flew in the winds of change, just to be
Another assuage of pearls lost in the mirage of deserts
For as the wheels turned its sails, to row across the land of veil
the past seem to flutter by, through the songs of the plying sky
In the blatant beats of a heated storm, the sand danced whirls
On the song of the Burning Sun-big, red and merciless
Lifeless to its eyes, to hide the tears that would be seen by....
Never hath it wanted the dreary disdain of a dry stretch,
For what dreams hath said, the blush of a land of faith
An unending stretch of verdant bliss, thronged by the gush
Of mighty brooks, rushing in the fires of hope to gain
The uneventful ending of a soul, to meet the eternal mane.
But alas! It was a dream, to overcome the plight
Of a dreaded reality. Hope was crushed a million pieces,
But still not dead among its reaches. For it paid a little,
Awhile the smile of a long wait, thus entered the reeling clouds.
Black and thunderous- the Sun withdrew-they fell,
As tiny drops of joy on the thirsty land for days.
When they went in the bid of a tranquil existence- it grew,
Rather sprung from the holy ground- its green hands,
Small and trembling- its red bud, ready to bloom....*

ଲୁହିତପବ୍ରିୟା ଡେକାବୀର

ହେ ଲୁହିପବ୍ରିୟା ଡେକାବୀର
ତୋମାର ହେଂଦାନ ଲୋରା ତୁଳି;
ଅସମୀ ଆୟେ ପୋରା ପ୍ରରଞ୍ଚନାର
ବଘ୍ରବୂପେ ପ୍ରତ୍ୟୋବ୍ର ଦିଯା ତୁମି ।

ଲୁହିତକ ଭୋଟି ଟାର୍ବାଇନ ପାତିଛେ
ନିଷ୍ଠରେ କିମ୍ ଆଛା କ୍ରି?
ନିଚଳା କୃଷକେ ଶୋକତେ ବିନାଇଛେ
ଲୁହିତର ପାରତ ଆଜି ବୈ ।

ଦେଶରେ କୋମ୍ପାନୀ ଅସମୀକ ଲୁଟିଛେ
ଉଦ୍ଧାର କରା ହେ ଡେକାବୀର;
ଅନ୍ୟଥା ତେଜାଲ ଲୁହିତର ବୁକୁତ
ପରି ବ'ବ ଏଦିନ ବାଲି ।

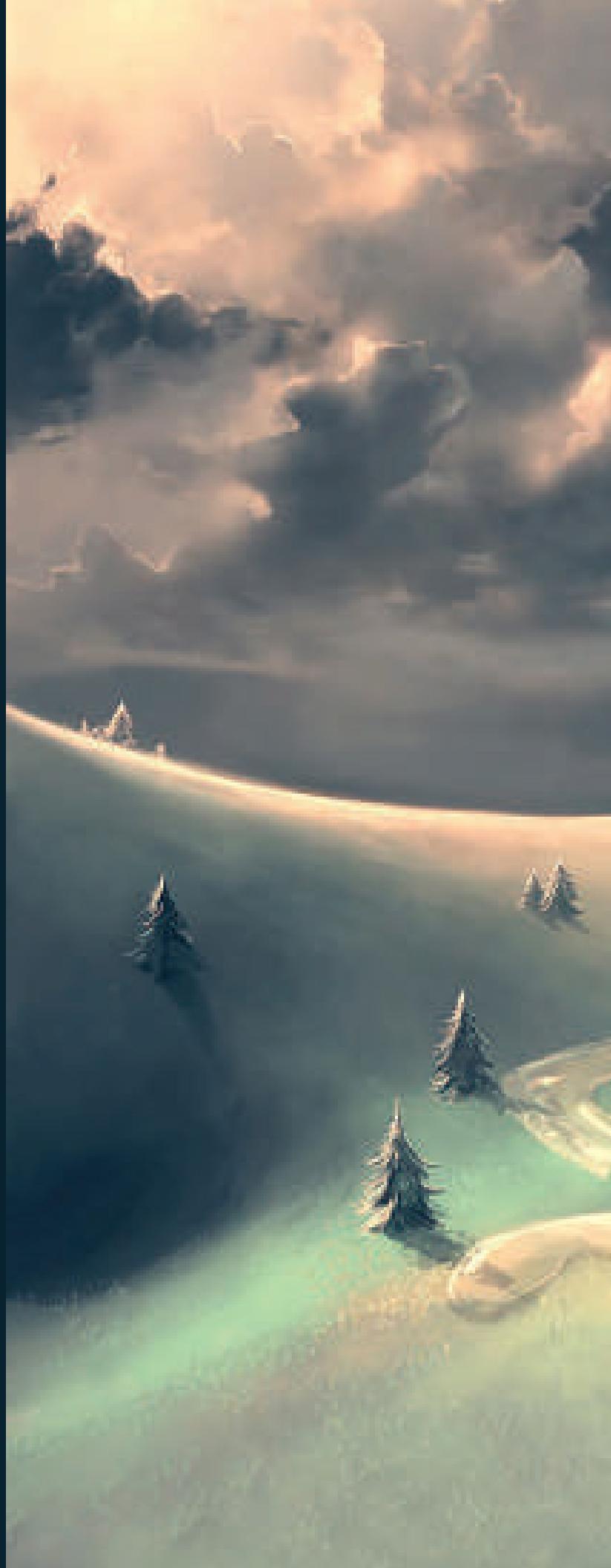
ମହାମିଲନର ତୀର୍ଥ ବୁଢାଲୁହିତର
ଅଞ୍ଚିତ୍ବ ବରକାରେ ଦିଯା ଯୁଁଜ;
ନହିଁଲେ "ଲୁହିତପବ୍ରିୟା" ପରିଚୟ ହେବାଲେ
ଲାବା ତୁମି କେନେକେ ଖୋଜ?

— କୌଶିକ ବରା (Kaushik Borah)

A Desire to Rain

I was Fire,
and I did rain,
No combat
no loss or gain
I had a meaning, but no words
and now a presence full of disdain.
Thoughts no more chirrup
nor does the bliss shine
As the tree is uprooted
and is away from its shrine.
Tell me who is to be blamed?
Neither the sun, nor the sky
neither the beholder, nor his eye
For the fish remained parched
even though being submerged ...
But lost its might in the new
and was unearthed.
'No vastness no salinity
do I demand,
Shallow and sweet is my aim.
Luxury would be my revival,
and then shall I rain again.

– Bhavna Kandra







Art by
JANHAVI KOLHE



स्वार्थ के दरबार

स्वार्थ के दरबार, जीवन के राज्य मे बहुत हमने लगाए हैं।

दरबार से संबंध तो हम सभी ने बनाए हैं,

कभी प्रवृत्ति, कभी नियति, तो कभी परिस्थिति से मजबूर होने का बहाना पेश करते आए हैं,

कुछ तो रोज़ दरबार मे ठहाकों की बहार लाए हैं,

तो कुछ शर्मा के, धीरे से, सिर्फ़ कभी-कभी मुस्कुराए हैं,

कुछ ने दबाव से, ना चाहते हुए भी, दरबार मे सिर झुकाए हैं,

और कुछ जो राज्य की रीत समझा ना पाए हैं,

वो दरबार मे बस जग-हसाई के पात्र बनकर नादान “हम और तुम” कहलाए हैं...।

स्वार्थ के दरबार, जीवन के राज्य मे बहुत हमने लगाए हैं।

प्रतिभा महाले





बेटियाँ

- एक परिवार

खुशबू हैं फूलों की जैसे...
बेटियाँ घर की पहचान हैं, वैसे...
हिमालय शिखर है, भारत के मस्तक पर जैसे...
बेटियाँ परिवार का सम्मान हैं, वैसे...
मंदिर मे भगवान की मूरत है, जैसे...
बेटियाँ हैं पवित्रता की खान, वैसे...
आसमान मे चमकता ध्रुव तारा है, जैसे...
बेटियाँ समाज की शान हैं, वैसे...
संसार के लिये प्राणवायु है, जैसे...
बेटियाँ भी हैं, अपने मा-पापा की जान, वैसे...
चंद्रमा के बिना रात हो जैसे...
बेटियों के बिन अंधेरी इंसानियत है, वैसे...

-ऋचा नजा जैन



उड़ जाने दो मुझे

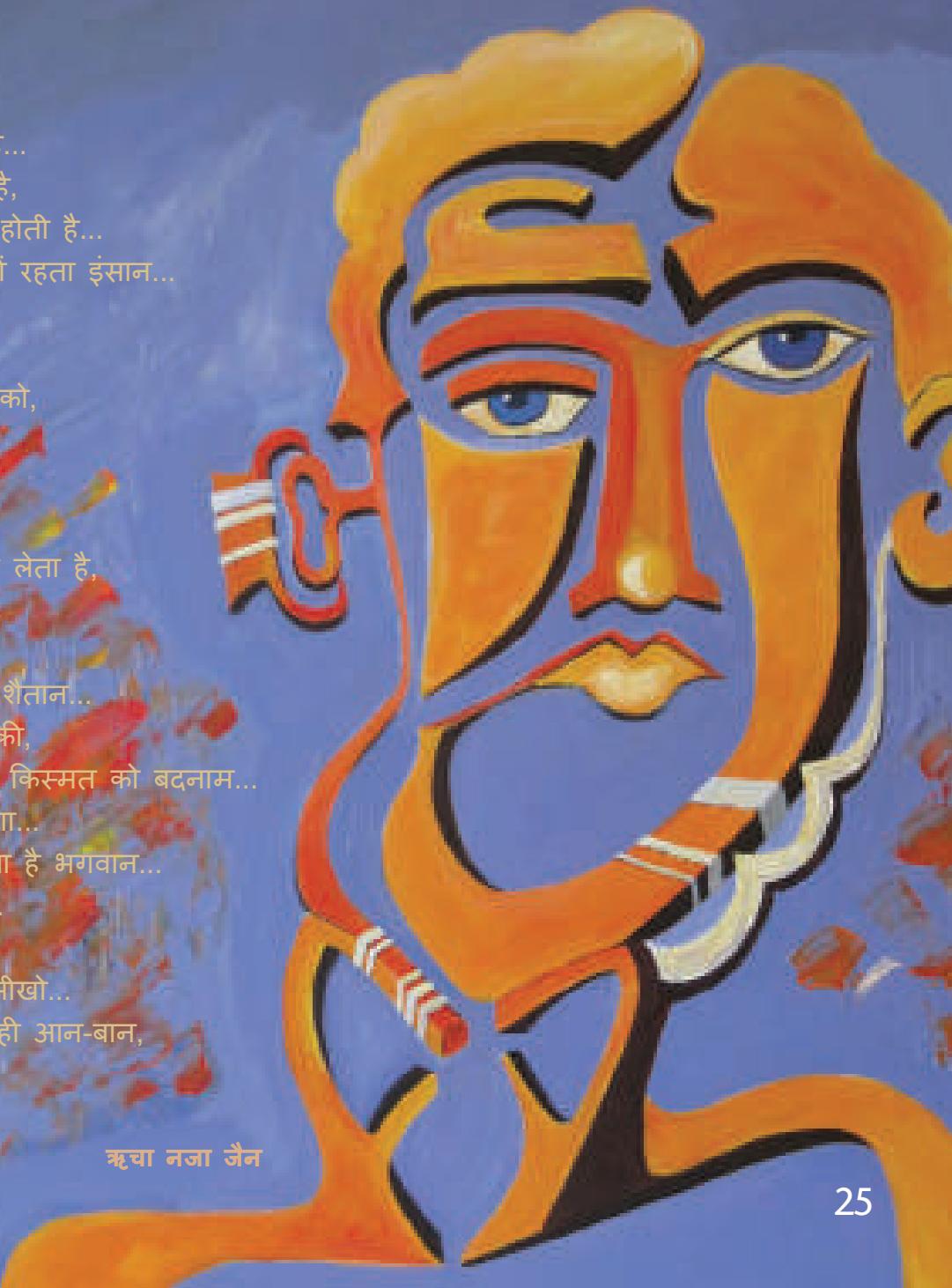
-इरफान अंसारी

हवा के झोंकों में बह जाने दो मुझे,
इन सुर्ख रातों में खो जाने दो मुझे ।
किस चाह में यूँ बेबाक जलती है शमा,
उस चाह की लौ मे जल जाने दो मुझे ।
कितने फँसले तय कर चुका है ये कारवाँ,
थक गया हूँ, ज़रा देर ठहर जाने दो मुझे ।
करूँ इंतज़ार क्यूँ मैं अपने साहिल-ए-हयात का,
इस दरिया-ए- मोहब्बत में डूब जाने दो मुझे ।
दम घृट रहा है इस नशिमन में अब मेरा,
आज़ाद परिंदा हूँ उड़ जाने दो मुझे ।

इंसान

खोने का डर तब होता है,
 जब पास कीमती कुछ होता है...
 पाने की इच्छा तब भी होती है,
 चाहे झोली पूरी खाली भी ना होती है...
 क्यों सुख-दुःख में एक-सा नहीं रहता इंसान...
 सुख में सरलता तो,
 दुःख में खो देता है सम्मान...
 देखकर दूसरों की समफालता को,
 क्यों जल है जाता
 सामने वाले का कष्ट सुनकर,
 क्यों पिघल ना पाता...
 झूठी तारीफ से घिरकर समझ लेता है,
 खुद को महान...
 सच्चाई से झाँकेगा,
 तो ढूढ़ लेगा अपने भीतर का शैतान...
 कमी नहीं है तुझमे भी खोट की,
 पर कितनी जल्दी कर देता है किस्मत को बदनाम...
 कैसे तू मानेगा, कैसे ये जानेगा...
 यही समझाने ठोकर देता रहता है भगवान...
 ठोकर खाकर संभलना सीखो...
 गिर जाओ, तो उठना सीखो...
 रुक जाओ तो आयेज बढ़ना सीखो...
 याद रखना, तुम तो खुद की ही आन-बान,
 और अपनों की शान...

ऋचा नजा जैन



Butterfly

Sitting inside the four walls
There's nothing for me to do
My mind wasn't thinking right
No advice went through
My hands fiddled with the hem
Of the dress I wore.
I wanted to run out screaming
But I couldn't. I was tore
I wondered why. I wondered why.
But there's no answer to my desire
To fly free in the sky
Just like the butterfly.
They open their wings wide
Colourful and bright, catching my eye
From one field to the next, from one flower to the other
Tasting the sweet nectar without any bother
They need not worry about yesterday or today or tomorrow
Nor will they ever need to drown in the oceans of sorrow
Neither will they fly into the sky so high
They're proud but humble beings till night
I'm jealous, looking from the inside
For they're free
It is something in my whole life, something I can't truly be.
There's nothing I can do nor would I cry
Only I wish someday
I could fly like a butterfly.



“હાઇકુ” એ ગુજરાતી સાહિત્યનો વિશિષ્ટ અલંકાર છે. મૂળરૂપે જાપાનથી અવતરેલી આ કળા આપણા કવિ-જગતથી એક ઉત્કૃષ્ટ પ્રતિસાદ અને પરિમાણ પામીને સુદૃઢ અને સુરમ્ય બની ચુકેલી છે. આ કળાની ગરિમાને વ્યક્ત કરતા આટલું જ કહી શકાય-

એક મહેચા
અનંત વિચારણા
અંતે હાઇકુ

હાઇકુની અસ્મિતા અને તેનું સૌનદર્ય તેની લઘુતા અને શબ્દવ્યવાસ્થામાં વસે છે. મુખ્યરૂપે હાઇકુમાં ત્રણ લીટીઓ હોય છે. પહેલી અને ત્રીજી લીટીઓ પાંચ-પાંચ અક્ષરોથી બનેલી હોય છે, અને બીજી લીટી સાત અક્ષરોથી બનેલી હોય છે. 17 અક્ષરોમાં આ ટચુકડી કવિતા ઘણી વાર ઊરો મર્મ વ્યક્ત કરી દે છે.

હાઇકુની વાત ચાલે તો કવિ “સ્નેહરશિમ”ને કેવી રીતે ભૂલી શકાય? આજે પણ લોકો તેમના હીકુઓની વખાણ કરતા થાકતાં નથી. તેમની કુતિઓ આપણા સાહિત્યની અમર કણિકાઓ બની ચુકેલી છે.

વિવિધ હાઇકુઓ:

સમુખ પૃથ્વી
નલે મીટ માંડીને
છાની રડતી

(કટાક્ષયુક્ત)

શિશુ કિલ્લોલ
બાપને રીજ્હાવતો
મા મુંજવાઈ

(પ્રાસંગિક)

કમળ શય્યા
રમણીય સાગર
શ્રીહરિ બેઠાં

(શબ્દચિત્ર)

આમ, હાઇકુની આ મનોહર દુનિયાનો એક અનેરો લ્હાવો માણવાની ઘેલણા તમને ચોક્કસ સ્પશ્ચી જશે.
છેલે, કવિ નર્મદ દ્વારા કલ્પેલી “ગરવી” ગુજરાતનો યશ ગાતા હું આટલું જ કહીશ-

સોનેરી ભૂમિ
અખંડ યશાસ્મિતા
હાલાં વાસીઓ



설성



Unreal Quarks

III

- 
- 32 IISc Animal Guild
Protests
 - 33 Obituary of the
Faculty Club Canteen
 - 34 Midnight Crisis
 - 36 So Long ...
and Thanks
for All the Votes!

In surprise move, IISc Animal Guild protests Mess Bill issue

SABAREESH RAMACHANDRAN

IISc, BANGALORE

The IISc Animals Guild (IIScAG) has declared its unconditional support to the Students' Council in the mess subsidy issue by joining in the protest. As a part of the protest, each constituent group of IIScAG, also known as species in the Biological Sciences building, are protesting in their own style.

The pigeons have gone on a feast unto death strike. They were seen consuming pulses, spinach, and other such foods that can be digested very quickly and cause loose motion. A BVG sweeper said, 'For the past two days, there has been excessive pigeon remains on the road. It is getting very difficult to clean the campus.' The owner of Parameshwara Dry cleaners, however, seemed pleased with this development, saying, 'I have received a lot of clothes in the past two days and made great profit.'

The dogs have launched a Room Bharo Aandolan. They occupy any room that is not locked. The plan initially was to occupy

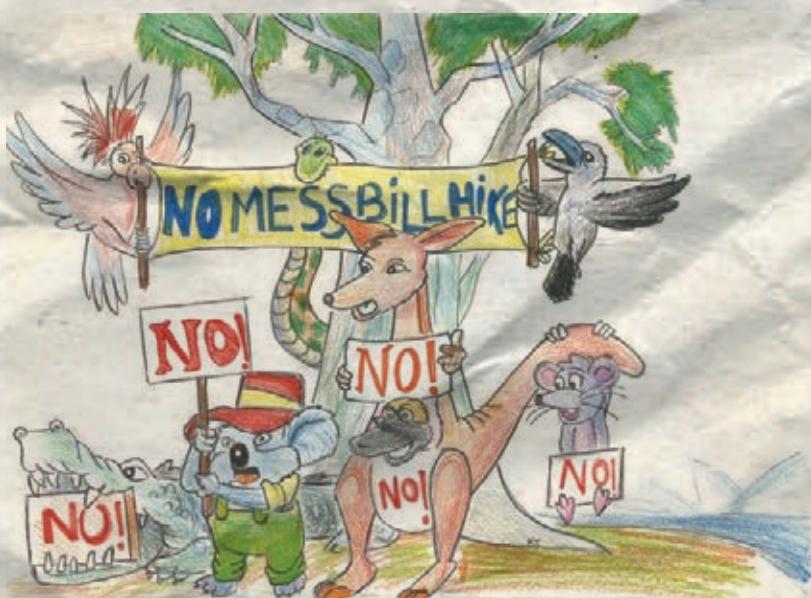
official buildings and administrative offices. However, some dogs have violated the protocol and have also occupied the hostel rooms of students. Hostel officials were not available for a comment on this issue.

The cats were expected to join in the protest walk. A student of New Boys Hostel had said, 'I am eagerly waiting for a cat walk.' However, they have instead decided to paint themselves black and walk across roads whenever someone passes by. However, this protest might be a failure, since most IIScians do not believe in superstitions.

Thankfully though, the venomous animals, inspired by Gandhiji, are on an Ahimsa protest.

The Health Centre representative, Dr. Ratish Sao, said they would soon be starting a veterinary extension just to be prepared for a possible bee attack on the animals during the protest.

The Mess President, Mr. Achintya Kundu, has thanked the animals for their support in this issue. It remains to see how successful the animals are in the protest.



Artist's rendition of protesting animals.

In Deep Memory of our Friend (and Dearest Respite), the Fac Club ...

by Atul Sharma



Obituary

FCC (Faculty Club Canteen) joined the Indian Institute of Science as an assiduous public servant more than a decade ago from today. Since then, he acted as a soulmate to every IIScian who considered them-

selves a champion enough to divide time between Ph.D. work (and more Ph.D. work) and leisure. He was named the Fac Club lovingly since it was supposed by the simpletons—whose simplicity should not be compared to the mindsets of the modern 2014 students—that only the members of the Faculty could achieve the above, i.e., achieve leisure time over office hours. But FCC drowned their anticipations into the Pacific Ocean of butter by his delicious parathas.

Every student, whether graduate or undergraduate, was related to Mr. FCC by wires of love that go from the heart and pass through the stomach. Fac Club served us all wonderfully in this respect with its delightful sandwiches, parathas, lemon tea, [one of my friends even suggested Badam milk] and especially the Maggi. He was considered the

coolest guy of the institute, for he became a magical provider of late night services—not the least of which included late night respites and cheap satiation to the monster of hunger gnawing at the forbearance of the hard workers in the institute—thus empowering the society by his good deeds (maybe preventing outrages towards ‘workaholic’ professors) and best wishes towards the younger, more sluggish generations.

In all these respects and many others, the people of the institute very subtly regret—though suspiciously, the administration might not—the sudden (and it seemed a really sudden and strategic time space, if anyone remembers), extremely tragic demise of our friend Fac Club. The Gods of the institute did not deem it indispensable for FCC to live any more, or perhaps the Gods grinned at the simplicity of the services that it provided, and the Fac Club got spontaneously (ruthlessly, for all who considered the decree necessary) effaced from the now rueful mien of this very modern and “intellectually advanced” institute of science, the best in the country. Let God (and this time the real one) and the Cosmos give peace to the soul, and the fervent employees and customers, of Mr. Faculty Club Canteen. Let God prevent any more such premature and obnoxious deaths in all institutions of this world. He will live in our memories till the end of time.



Midnight Crisis

by Rohit Chatterjee

A sad thing happened towards the end of March. On the sheltered cul-de-sac turning left on the Bank Road just past the Archives and Publications Cell, it was left to the passers-by to notice that the usual crowd surrounding the windowed opening and inhabiting the dismally dirty benches was absent, as was the illumination afforded by weak halogen lights put up on the walls. Which would be usual for any decent place of business at one in the morning (or night, if you would), but then, the Faculty Club Canteen had never portrayed aspirations to any sort of aesthetic standard. The last resort for the critically sleepy and underfed had summarily breathed its last.

Which would lead the presumptuous to believe that the demise of the late-night eatery and hangout in our campus was good news for the students, but that, like most loudly-voiced opinions, would be totally wrong. The aspiring young scientists that we are, the students of our campus are liable to keep odd hours, mostly due to the efforts of our well-meaning (I am sure) instructors, and often our equally well-meaning though not-so-well-functioning lab equipment. And as we find to our detriment sooner or later, a mixture of adrenaline, caffeine, loud music and end-of-deadline hysteria is not always enough to carry one through one's nightly travails, but must be supported by some form of tangible nourishment.

The Faculty Club Canteen functioned to address this very specific and lucrative market of late-night consumption. Yes, there are those among us who hoard eatables in their rooms and gorge on them in secret, but let us not speak of such Gorgons. The less foresighted find that they cannot actually eat hard cash, and drag themselves to the 'Fac Club', as it is affectionately known (Some also go to the Gym

Café, but as you have to cross an actual bridge to get to the place, and orders there sometimes take more time than Flipkart deliveries, it is slightly lower in the pecking order). Or should I say used to, because it is now no more (cue for sobs). The pretenders, read Gym Café, have the throne now, and the entire student body keens in sorrow in accompaniment to their stomachs.

To reminisce, now, the Faculty Club had never shown pretensions to aesthetic virtue. A small clearing among the foliage surrounding the Bank Road, it staked its claim as an eatery with the help of a few ancient iron tables and benches which were variegated by age, bird droppings and years of deposited muck and grime by agitated and drowsy students. The clearing itself was mostly covered in litter and dead leaves, and the halogen lighting often made it the sporting location of choice for the canine population of the campus (these are wonderful animals, which in keeping with their motto of eternal friendship of humankind keep the same hours as the majority of the student population). Of course, it wasn't like anybody cared. You'd be surprised how much an irate brain and an empty stomach can suppress one's sense of cleanliness.

The actual place the food came from was inside the adjoining building, through the window. The menu was nothing special—tea, biscuits, other ready-made snacks and savouries, soft drinks and also rudimentary food, including Maggi in several variants, eggs done to order (which means boiled



or fried), and also aloo parathas, the perennial circular delight, deep fried with potato filling. Service was fast and efficient, change was always handy and the regulars enjoyed their little perks. The beverages always served to keep awake, and served with distinction. You won't see people swearing by the taste, but the food was hot, sumptuous, tasty, and filling, and thoroughly adequate for a midnight joint. Some people did lick their fingers, of course, but that was mainly because their fingers got sticky and there were no tissues handy. You didn't get to eat in the cleanest of places, but as Nietzsche said, what doesn't kill you makes you stronger, and in this case definitely made you feel full and warm. Those to whom the ambience mattered would say that the place was always vibrant and enjoyed a good crowd (as large a one as might be expected in the wee hours), with the comforting chatter of inconsequential conversation always in the air.

Make no mistake, the fact that such an institution existed was often the driving force behind a lot of people working late at nights. In that sense, one could almost say that the Fac Club was instrumental in increasing the productivity of students. Thus there are grounds to say that the loss of this eatery will be felt by all the students who tried to finish an honest night's work. And it will hurt all the night dwellers, the denizens of the dark, that when the gastric juices and the stomach groans come calling, there will be no cheap night eatery to give their stomach linings succour through the long dark night that lies ahead.

Fac Club Facts

- The Fac Club actually opened in the early evening, and started by serving tea.
- A dark, shadowy being lay at the fringes of the clearing at night and summarily devoured those who didn't put their litter into the waste bins. This is part of the reason why many people in IISc are unable to complete their degrees. The being is now understood to have moved to the Jubilee Gardens.
- Specials were sometimes served at the Fac Club.
- Attempts to buy instant noodles or to carry other snacks to the room were dealt with by the monster alluded to above.
- Half fried eggs at the Fac Club were so runny that fat people were advised not to order them. Why? Because they overflowed, of course.

So Long ... and Thanks for all the Votes!

by Harsha Gurnani and Medha Shekhar

Hopefully, this will not be the message the “Aam Aadmi” will be left with as his elected representatives—the 542 MPs—retire into their luxurious villas for the next 5 years (or so), where they shall commit themselves to:

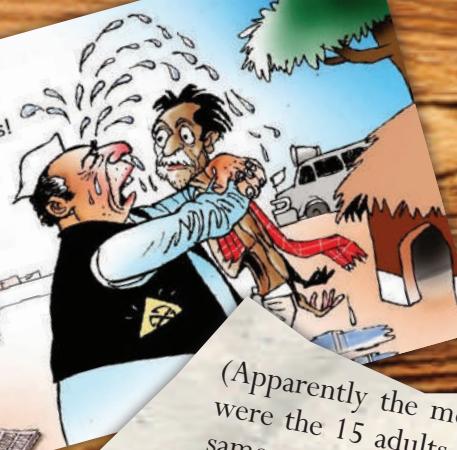
- a) deciding which government scheme would be appropriate for taking care of their upcoming vacation in Geneva,
- b) issuing directives for effective utilisation of resources that results in an accelerated (economic) development of India, representatively, and
- c) funding a secret research team that shall perform the most dangerous experiments to determine how to “silence” Arnab Goswami.

Or as they like to call it—work as usual. However, the authors were severely reminded by the large number of jubilatory posts and discussions that have almost hijacked social media (the kittens are reportedly planning a painful revenge), that this election has been all about CHANGE.

Indeed, just when politicians had begun taking appeasement and blackmail, hunger strikes and tantrums to be an essential part of their list of duties to the nation (which may or may not include upholding laws and ensuring a functioning government), one man came and changed the game completely. He has been the biggest champion of the RTI Act, attempted to EMPOWER WOMEN by taking a diversion from the culture of dressing up social evils in garish sarees and make-up, and showed us the side of politics that really mattered. Without doubt, he’s the man who can be associated with the (supposed) rage, impatience and dissatisfaction of the young electorate that’s increasingly vocal and critical, he’s the man of the hour, or rather NewsHour—Arnab Goswami.

Now there has been a lot of criticism against this man, and innumerable memes and jokes on his journalistic style, but one cannot dismiss his immense contribution to the electoral result (as well as to the channel’s TRPs). Political analysts have created a fuss about how these elections were about individuals, and not parties. Mr. Goswami is probably the only individual to have successfully united the people of India, despite all barriers of state and caste, and getting such a decisive mandate on this question of penultimate importance—who shall be the PM of India in 2014?

After all he gets to
see him again
only after five years!



(Apparently the most important question that plagues the country today is—who were the 15 adults to have voted for Rakhi Sawant? Smart money would be on the same people who participated in her Swayamvar.) While there would be several people clamoring for the credit just accrued to Mr. Goswami, with Modi as the frontrunner (credit or no credit, he still got the perks), and A. Raja among other favourites, Mr. Goswami is the clear winner.

To begin with, there were only two real contenders for the top job, the others just wanted to teach the kids that “winning isn’t everything, it’s the spirit of competition”. (On the other hand, could they also have been conniving to stab the winner at the end of the race, so they could cry foul play and ask for a re-race?) The Delhi citizens, generous as they are, thought the AAP deserved at least one fair chance to prove their merit. But the “Aam Aadmi” Kejriwal’s ambitions were a bit beyond “(Jail ki) Roti, Muffler aur (Do) Makaan”. Five months later, even Delhiites couldn’t tolerate someone who outdid them at snobbery and hollering.

There were a multitude of reasons to be disappointed in the UPA government—the multi-multi-thousand crore money siphoning (scams), brazen corruption, economic meltdown, inflation, the blame games, general irresponsibility but hey! Our politicians aren’t saints, they are allowed to fool around a bit, here, we’ll reshuffle the cabinet for fun/to diversify our plundering experience to other departments/as a “symbol” of our dedication to tackle inefficiency and corruption. At least that’s the gist of Mani Shankar Aiyar’s ravings—political rhetoric.

In response to all the criticism the UPA received, they warned the public to endure these “lesser evils” to avoid an autocratic, dictatorial, and communal government. It’s a very convenient and quite conventional tactic of generating fear about what *may* happen against the anger at what *is* happening, which looked lacking against the quirky Modi anthem videos and his holographic speeches. (Moreover, isn’t the politics of hate, of instigating fear and paranoia a trigger for the very same hazards they were so earnestly advising us to take precaution against?) In any case, it was a difficult balancing act for the Indian public, until of course, the fateful day when Rahul Gandhi made his debut on national television in an exclusive interview with Mr. Goswami.

Now it should be noted that up until then, Rahul Gandhi had come across as a rather immature individual but not an uncharming presence at public events. Even though calling him a promising young man would have been quite a bit of a stretch, there wasn’t enough opposition to him despite his occasional gaffes, simply because he had done very little to comment upon—he was just a pretty face from the Congress. But Congress definitely lost the election the day it decided to humour Rahul Gandhi’s childish aspirations and tantrums, and allowed him to walk into a room full of Arnab Goswami’s questions unaccompanied. Daredevilry may very well be an impressive

strategy, but it is not evolutionarily too stable. The inevitable happened. Kapil Sharma lost his job as Rahul Gandhi's interview elicited more laughter and guffaws than the most outrageous costume the self-acclaimed Comedy King of India could dare to wear. However well-suited the man may have been to provide the daily dose of humour, Rahul Gandhi was clearly not the man to be handed over the country's fate. After all, five-year-olds aren't too careful with their toys. This is what Arnab Goswami managed to do in an hour, which the numerous television debates and relentless mud-slinging and unapologetic self-aggrandizement couldn't accomplish in months—get an overwhelming mandate to keep Rahul Gandhi, or anybody who advertises/supports/worships him, out of the prime ministerial chair.

Thus it came to be that Digvijay Singh's personal recommendations just weren't good enough. April came, and millions displayed their inked fingers along with self-righteous statuses, even as they shoved the other finger into Congress' face. The country was hit by a massive TsuNaMo, and hopefully, the only destruction caused by it was the thrashing of Modi's political opponents. Exit polls had predicted an NDA win, but no one saw the Congress' crash and burn (Rahul's grin indicated he didn't see it after the result day either). The vote-counting concluded to announce big winners and big losers, and winners-who-were-still-losers (who sulked because their seats were useless as whips). In an unusual move, many politicians were ostensibly ransacked by guilt and instead of blaming one another, seemed determined to take the responsibility of defeat upon themselves and even tried to inflict self-punishment (though there is the possibility of an ulterior motive). This election turned out to be high on the drama quotient, if not intelligence; however the story is not yet over.

Narendra Modi has been portrayed as a messiah by some, a devil by others. His government is expected to function in extremes—miracles or blunders; a quiet, average regime would be a disappointing anti-climax. Modi himself isn't trying

to underplay the emotions—he's not a man to be content playing the Aam Aadmi card. From his first speech in the Lok Sabha to the oath-taking ceremony, he demanded attention, seeking to inspire awe and continuing to surprise. He's not afraid of the public watching his every move, he revels in it. But in this case, bad publicity does exist, as the UPA learnt too late. He apparently cannot be bullied, but he should not be seen bullying his allies and neighbours, or even the Opposition, unless it's one of our over-friendly (and exceedingly nosy) neighbours.

The swearing-in ceremony for Modi and his Cabinet was held on the sprawling grounds of the Rashtrapati Bhavan, with a large number of esteemed guests (who happened to be filthy rich as well), while millions others saw the spectacle on their television sets. The presence of the SAARC leaders, including Pakistan's PM, Nawaz Sharif, fueled a good many discussions. This came as a relief to comedians who were tired of lambasting RaGa (Why shouldn't boys have some fun?) for they found a lucrative new topic—Uddhav Thackeray threatening to "nuke" Pak. He probably overestimated the skills and reach of his goons as well as his own political clout.

In other news, Smriti Irani was the weak link targeted by the "anti-Modi" squad for her "educational qualifications" (or lack thereof) and the supposed irony at her being appointed the HRD minister. No one questioned her credentials while she spent years being the moral and entertainment guide and mentor for millions of women, and suddenly *Tulsi bahu's* grade card isn't good enough? (There is no well-established study to correlate a minister's competence and his/her educational qualifications, yet. There are rumors though that this outspoken criticism by Congressmen is soon to stop. After all, if the fate of INC with the party leader's dubious origins and education is anything to go by, they believe they will have enough grounds to criticize Modi's reign during the next elections. Yet "party policy" prevents them from citing this example in the open.)

Not one to diddle and dawdle, Modi's first week at office was as intense as his campaign. Indeed, one wonders if that's his strategy against his (almost) Opposition which is not too known for alacrity. Others postulate that these "gimmicks" will last only until FIFA season arrives. Even so, hint at invoking Article 370 (All states are equal but some states are more equal than others) or frown upon reservations to keep the Congress happily occupied, while formally announce ten-point agendas to solidify your "development quota" support—well played, Modi, well played.

Unmindful of these tireless argumentations and retrospection, time will march on, and it's good manners (and a safe option) to sing along with Modi, this delightful anthem:

Beasts of India, Cowards of the Land,
Beasts of every caste and crime,
Hearken to my joyful tidings
Of the Golden Future Time.

Ten years late, the day hath come,
Silent Man has been o'erthrown,
And the corridors of power,
Shall be run by me alone.

'Caps' shall vanish from their heads,
And the allies from our back.
Godhra case shall rust forever
Diggu, jokes, no more shall crack.

Riches more than the mind can picture,
And the tax office can count,
Shall be ours in this New Republic,
When this iron throne, I mount.

Beasts of India, Youth of the Land,
Sing along to this dulcet rhyme.
Hearken well, and spread my tidings,
Of the Golden Future Time.

Kyunki acche din ...

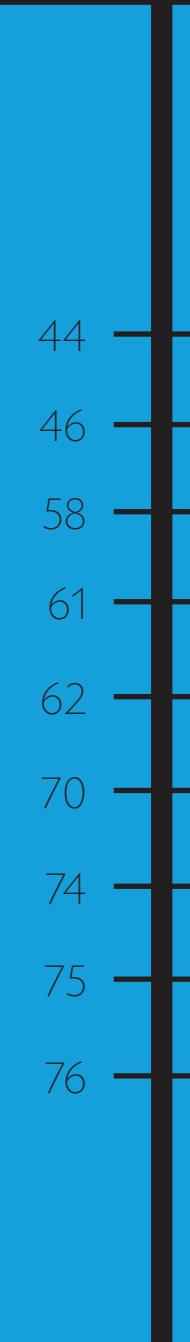


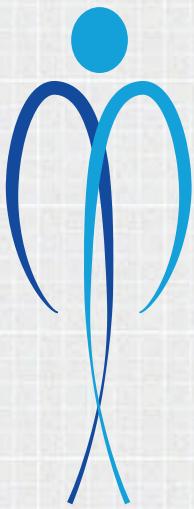
Disclaimer: The last song in the article is a take on the 'Beasts of England' anthem presented in George Orwell's *Animal Farm*. The appropriate tune is described in the book. It would also be a great idea to read the book—a true political satire by all means. This article may include events that have not transpired, and its purpose is "mainly" to entertain and ridicule, rather than espouse the cause of any political organization or individual.



Pravega

III

- 
- 44 From the Chief
 - 46 Events
 - 58 Lectures
 - 61 Giggles!
 - 62 Pronights
 - 70 Waxing Nostalgic
 - 74 A Look to Next Year
 - 75 A nanopolitan view
 - 76 An Interview with Tapan



Pravega 2014

Science, tech and cultural fest
Jan 31st–Feb 2nd, 2014

Hosted at



IISc
Bangalore

Pravega, a fest that fostered an eclectic atmosphere for three days this year, continues to remain in our minds. While the stage is being set to welcome the next edition of IISc UG's brainchild, the names and brands associated with Pravega '14 convey much about the overarching nature of the fest. The statistics do not lie. Not *this* time, at least.

The editorial team would like to note the contributions of the following people to this article: Aravind Rao Karanam, Harsha Gurnani, Medha Shekhar, Milind Hegde, Pranav Kantroo, Rohit Chatterjee, Sahana D Rao, Siddharth Kankaria, Suhas M., Naren Manjunath, Shriya Pai, Sridevi V. and Subhayan Sahu

Photography Credits: Abhinav Jain and Utkarsh Vijay

Jan 31–Feb 2
3 days

4.1K registrations
and overwhelming footfall

46 events
19 science, 8 tech,
13 cultural, 6 workshops

More than
₹10 lakh worth in prizes

30+ sponsors

Over
200 volunteers



From the Chief

Interview with the Chief Coordinator of Pravega '14, Pranav Mundada

After the enormous success of Pravega 2014, its Chief Co-ordinator Pranav Mundada had graciously stepped down to allow one of his juniors to take on the responsibility of carrying Pravega forward. However, there were lots to be asked and said about his experience and sentiments regarding the fest. The Quarks team thus decided that they could not let Mr. Mundada go without getting an exclusive interview out of him and thus arrived our interviewers, knocking at his hostel room of N-block.

(Quarks Team) QT: What was the situation one month before Pravega?

(Pranav) P: The situation was very tense. We hadn't received the funds we had expected. To add to our woes, Indus Creed, which was scheduled to perform during the pro-night was demanding more than what was initially promised. Also, only seven tickets had been sold due to their high pricing. This required us to rethink our decision regarding the choice of bands. Abhinav and Apaar came to the rescue and suggested that we approach Agam, a popular Carnatic progressive rock band. There were intense discussions among the core committee members and the decision to have Agam enabled us to price the tickets at a nominal ₹50, also making the entry free for IIScians.

Amongst our troubles was the slow pace at which the engineering events seemed to be moving and the inadequate publicity. The print media partner had not been meeting our expectations and we were yet to find a radio partner. Good news came to us in the form of a mock run of the Treasure Hunt which was extremely well received by the student community. Also, the collection of funds during the second week of January gave us the much-needed morale boost.

The IISc UG community was very enthusiastic and provided helpful suggestions and solutions along the way.

QT: What sort of support did you receive from the UG community?

P: The IISc UG community was very enthusiastic and provided helpful suggestions and solutions along the way. Even those who were not actively involved in organising events were ready to lend a hand in volunteering for the events.

QT: What made you change the structure of the organizing committee?

P: Our previous experiences with the organising committee elections told us that an immediate change was required in the structure of the committees to maintain the highest degree of efficiency. What we subsequently came up with seemed like a natural solution.

QT: What procedure did you follow to form the new core team?

P: There were applications from all three batches of the UG community. The applicants for the post of Chief Coordinator were interviewed by the core committee members where we looked for their general attitude and vision for Pravega. The decision to make Tapan the new Chief Coordinator was unanimous. Interviews for the post of heads of other committees were taken by the new Chief Coordinator and the Core committee members of Pravega '14.

QT: Tell us about some of the memorable experiences you had during Pravega.

P: The Pro-nights were a lot of fun, especially Agam's performance, which was enjoyed by all.

Another thing I remember is being made to look after the workshops that were taking place in the OPB. As most of us know, the OPB is famous for its lack of connectivity and staying inside a building all day with no signal on your phone or an internet connection made me feel cut off from the world. It seemed as though I'd been stuffed in a wartime bunker.

During the same time, the people in charge of delivering the Pravega merchandise also managed to misplace them on the train. Naturally, we had spent two days hunting for them in various stations. Our search bore fruit on the third day and the goods were safely delivered to the campus.

It was also nice to show the Chairpersons of BASF and Zeiss, along with their kids, around the campus. The kids took great pleasure in playing games of Tri-D Chess.

QT: What do you think are the perks of being the Chief coordinator?

P: There are several. For example, we get to visit renowned companies like Benz, BASF and establish connections with consulates and science consortiums, which can have long-term benefits. To quote Margret from Swissnex, "*You people have done a remarkable job. If I were to receive applications for scholarships or internships, I would definitely choose the one that listed activities such as the ones you guys have done, all other things being equal.*"

We were invited to lunch at JW Marriot, by the German Consul General, where we had the honour of interacting

We were invited to lunch at JW Marriot, by the German Consul, where we had the honour of interacting with various German dignitaries.

with various German dignitaries and gained valuable insight into German tradition, lifestyle and education. After the lunch, we enjoyed V.I.P. treatment at the Bangalore football stadium where we witnessed an exciting Bangalore FC match.

QT: What do you want to say to the volunteers?

P: Pravega wouldn't have happened without you guys. Thank you all for the support. This is your fest. I look forward to your continued support in the coming years.



Events

The heart of Pravega

Biology Events

A group of highly motivated undergraduates, the self-styled “Naturalists”, began the preparations for the Biology events of Pravega, towards the end of November, 2012. From all the ideas put forth during the highly animated brainstorming sessions, four live events were finalised for Pravega 2014. The organisers were resolute to challenge all forms of conventionality in conception and execution of the events, so as to capture the imaginations of even those who seem to dread the subject.

The next fourteen months were spent in a daze of meetings, discussions, sharing of Google Docs, arguments, critiques, and deciding topics, questions and puzzles for the various events. Indeed those days were as exhilarating as the final three days of Pravega themselves. For all who missed

the excitement, and those who want to relive it, here's a glimpse into the magical three days of Pravega, au naturel.

Colours from the Grey

The mega-competitive, nerve-wracking and the most technical of all Bio events, CFTG, was clearly one of the biggest successes of Pravega 2014. Designed as a computerised multi-parameter optimization (strategy) game, the Finals round required the participants to traverse a hexagonal array from one end to another, in the least amount of time possible and with the maximum number of points, too. Upon reaching each cell, they had to solve a biological question/puzzle to unlock neighbouring cells. All the questions had been devised to test the participants' sound understanding of fundamental concepts in biology, their

analytical reasoning as well as their ability to come up with reasonable hypotheses to explain a variety of phenomena. With a total of 8 teams in the Finals, the entire room buzzed with electricity, with the participants displaying a great deal of determination and passion, each team refusing to give up. Though no team managed to reach the last cell, the fight was quite intense, as the teams battled it out till the last second, for the winner's trophy. The prize went to the team with the maximum points, which to everyone's surprise, comprised of one major each from Physics, Mathematics and Chemistry. The absence of a Biology major in the winning team as well as the feedback from all the participants established beyond doubt that the organisers had triumphed in shattering common notions of rote-learning and factual comprehension usually associated with Biology, ultimately leaving an impression that the Biological Sciences is as exciting and as logically demanding a subject as any.

The organisers had triumphed in shattering common notions of rote-learning and factual comprehension usually associated with Biology.

Act of Life

The inner thespians of the participants were brought out in this game of biological dumb-charades, wherein the participants enacted out biological terms and phenomena, communicating them to their team-mates and the audience via only role-play and sign language. The third round of the game was unquestionably the most entertaining, combining with dumb-charades, all the fun and confusion

of a game of 'Chinese Whisper'. Interesting phenomena were enacted out by members 1 through 4, from one to the other, in sequentially successive pairs. The audience observed in hilarity, the drama unfolding through the evolution of the terms as they got passed on from one member to the next without the utterance of a single word. Testing the wit, acting skills, presence of mind, and most importantly, common sense of the participants, the USP of this event was truly its fun and amusement quotient.

TurnCoat

With its motto "Challenge yourself!", TurnCoat was the unique debating event of Pravega 2014, incorporating a principle of questioning one's beliefs and broadening one's horizon beyond personal biases. It also emphasized the ambiguities that are often associated with scientific research. The event, as the name suggests, required participants to switch sides during the debate any time a buzzer was pressed by the judges, which demanded remarkable quick thinking from the participants. The topics were chosen to steer clear of the stereotypical and over-hyped, and were more general than specific. Indeed, a lot of the participants had minimal biology background but with a passion for argumentation, could not resist the temptation that the event was. The Finals round encompassed critical questions on artificial intelligence, the distinction between 'living' and 'non-living' and even homosexuality, where the participants offered impassioned speeches, only to be followed by a spirited and heated interjection by other finalists, the judges and even the audience. The idea of a TurnCoat debate delighted all, none more than the judges themselves—Dr. Deepak Saini and Dr. Kavita Isvaran, whose enthusiasm and excitement was truly infectious. The debate's charged atmosphere was more stimulating than exhausting and indeed managed to fire imaginations, leaving everyone inspired, and quietly (or in some cases, loudly) pensive.

LexicoBio

The most successful and popular event of all, LexicoBio saw a turnout of more than 120 participants at its stall, in merely 4 hours. The morning session had each participant write down the spellings of 15 biological jargons, which was recited to them at the stall. The 30 shortlisted participants were called the next day for the second round, and

after around 10 tiebreakers (yes, you read it right), the 10 finalists were selected for the third round. These finalists had to verbally spell out a few complex and quite confusing biological terms. After a lot of interesting versions of the spellings, a few “Ah, I almost got it” moments, and one very interesting faux pas (which has been very coyly refrained from being mentioned here in print), there emerged the three very well-deserving winners. This event had students from all age groups, from high school students to PhD students, pitted against each other till the very end. To top it all, was the delightful judge, Dr. Galagali, who stole the afternoon with her free-spirited and candid, and yet absolute authority-demanding electric personality. She corrected as

well as teased the participants at the same time, and truly kept the show in motion during some of the truly intense moments of the afternoon. As the third and final day of Pravega drew to a close (but not without a phenomenal, hair-raising performance by Agam later that night), the organisers agreed that there couldn’t have been a more satisfying end to the first edition of the Pravega Bio segment than with this instalment of the universally enjoyed and invariably loved spelling bee.

After a successful premiere, it is hoped that with the continued effort of four enthusiastic and extremely creative undergraduate batches of IISc, Pravega shall emerge to be a most supercalifragilisticexpialidocious fest.

Engineering Events

Reverse coding

“If debugging is the process of removing bugs, then programming must be the process of putting them in.”

– Edsger W. Dijkstra.

No sooner had we come to the first day of Pravega than it was already showering bugs. Or should we say bags? Full of prizes, we mean. Reverse Coding proved to be the smash hit of the day with more than 25 teams from all around Bangalore fighting it out for programming supremacy in Reverse Coding, or shall we say, Gnidoc?

A seemingly innocuous game of pattern recognition turned into a crowd-puller because of its innovative approach towards coding. The questions had some executable files given, which the teams had to crack by playing around with inputs and recognizing patterns in the outputs. In a nutshell, the teams had to manipulate the results and come up with a pattern and express it in terms of an executable computer code for that bit of file.

The event was divided into two parts, Prelims and Finals. The Prelims were meant for straining out the neophytes in Coding for the main event, Gnidoc Finals. Clearly, putting bugs in and then taking them out isn’t a particularly easy thing to do! The Prelims started at 12 pm in the Lecture Hall of OPB and went on for an hour.

26 teams of three (or in some cases, two) participated in the Prelims. The participants were mainly undergraduates,

along with a few intrepid high school students. The questions in the Prelims were basically to test the ability of the participants to decode the hidden patterns in sequences of outputs and their corresponding inputs.

The finals involved 6 teams fighting it out in the UG Computer Science Lab from 3:30 to 5:30 p.m. After two hours

*Ultimately
everyone returned
a winner, with bugs
or without them,
discussing Java, C
and C++.*

of intense coding, finally a team consisting of three high school kids emerged victorious. The fact that all the other teams consisted of CS undergrads made their victory even sweeter. Prajwal, Ankith and Rakshith, all Class 11 students from different Bangalore schools, won on a tiebreak, solving the harder problems among the tied teams. They walked away with glory, much adulation and the sweet sum of ten thousand rupees.

Ultimately everyone returned a winner, with bugs or without them, discussing Java, C and C++ as the Pravega Man called it a day for the first of the 3 days of fun, frolic and science.

Connect the dots

After Reverse Coding on the first day, it was Connect the Dots on the second day that captured the imagination of all the coding fanatics in the fest. Connecting the dots to come up with a drawing is considered to be one of the first instances of cognitive development in a child. In this virtual Treasure Hunt conceptualized by the R.L. Stevenson's of programming, the teams had to reach the Treasure Island (destination file) through a maze of files, folders and numbers!

The quest began with a question in a source file, the answer to which gave the address of the next folder and the file in it. The questions involved the mathematics of numbers, capturing their beauty just as an artist draws his muse, or as a chemist holds his test tube, and still more aptly, as a programmer treats his arrays.

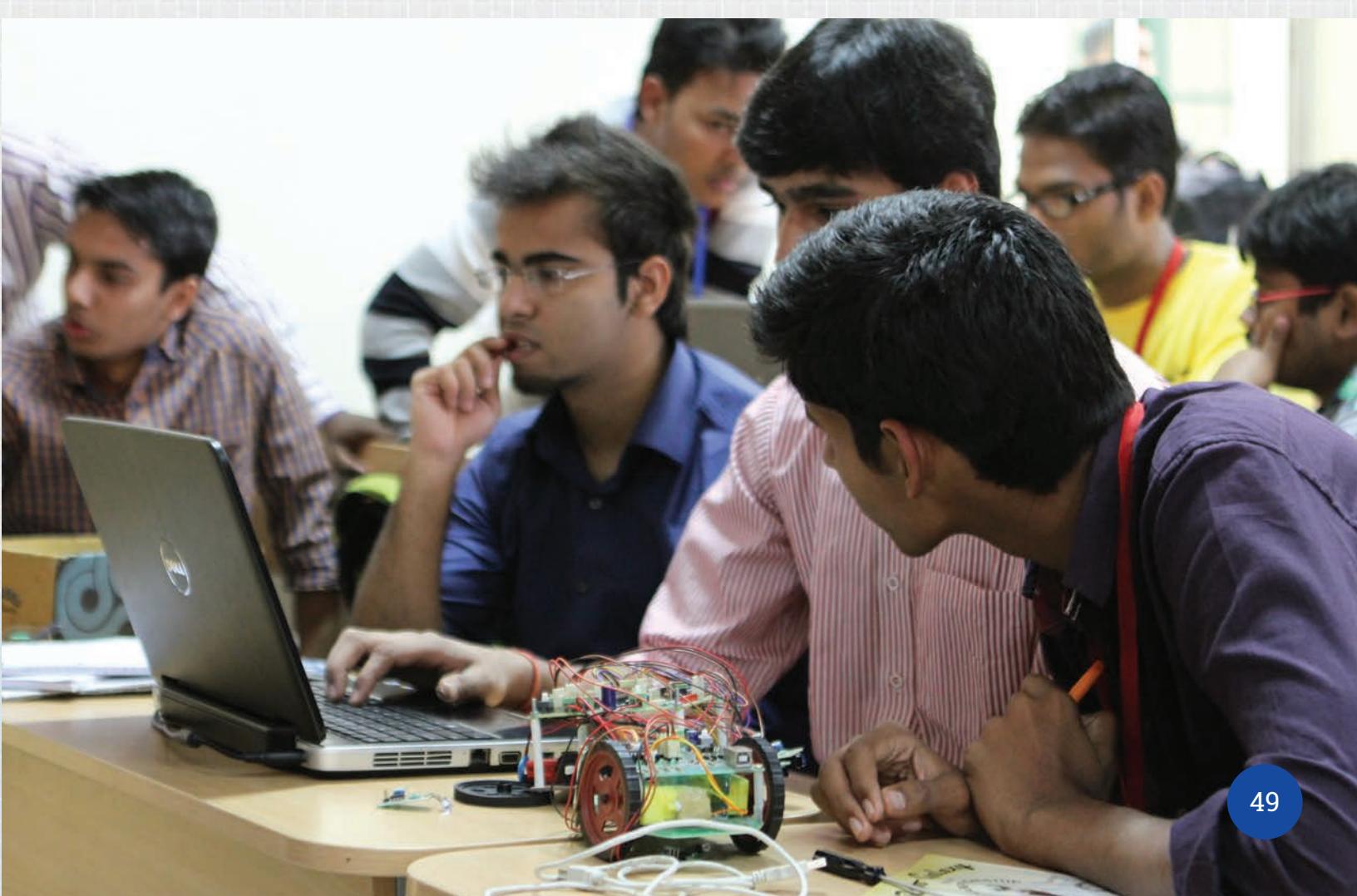
To reach the finals of this event, more than 20 teams with three members each had to cross the hurdles of the Prelims first. The Prelims were an hour-long dive into the world of mathematics and number theory, the answers to which held the key to the next round. The finals were held in the UG CS Lab for 2 hours, with 6 teams fighting it out to reach the destination first.

In this virtual race to glory, an all-girl team from RV College of Engineering emerged the winners, reaching the X spot on the Treasure Cove before their fellow buccaneers. Only this time, they had Math to give them company instead of rum!

The treasure hunters, Meghana, Bhavya and Aparna were given cash prizes to take home, but the other teams shared their joy equally, just as all the teams shared the same feelings of nervous anticipation while working their way to the final destination.

Remote control car racing

Pravega brought a whiff of west wind that caught the usually tranquil IISc environment by surprise. The sombre



environment of IISc was abuzz with activities as a bunch of confident UGs presented the first edition of Pravega to the world.

The third day's schedule was jam-packed with events, talks and performances, of which the RC Car Racing event turned out to be one of the many hits. In an institute known to the world for the enviable scientific acumen it houses, finding fans of robotics was never a difficult prospect. However, the sheer number of interested participants and audiences from IISc and outside made the event a grand success.

Shaking off the Sunday Morning syndrome, people started pouring in even before the main event started at 10 in the morning in the patch of green in front of the Main Library. Awaiting them was an elaborate racing track with sand pits, rotating disks, soft balls and sharp turns. 9 teams of 3 to 4 people participated in the event; most of them were postgraduates from around Bangalore while 3 teams were from Vellore Institute of Technology. The teams had all components and instruments available to modify their prototype. Most of them used Remote Controls to control

their Cars, while one group used the Bluetooth facility of their smartphones instead.

The path to success was as rugged as ever. Only one team from Vishakhapatnam, could finish the race in one go. The other teams had to forfeit the first race and finish it in their second or third chance. The competition went on till 3 p.m., but the crowd didn't thin at all. The chairman of the Student Council, IISc, came to watch the proceedings. A representative from the German Consulate and his family were also there among the crowd for a long time. Finally, the team from Vishakhapatnam emerged the winners; incidentally, they were the ones to use their mobiles' Bluetooth.

As the crowd slowly dispersed after a riveting day of RC Car Racing, the smiles on the Volunteers' faces said it all. They had pulled off an all-nighter the day before and had made sure that the event continued without any major glitch. They also ensured that the audience present never felt bored during the frequent lulls caused by multiple repair breaks by playing music. Finally, nothing could beat the enthusiastic presence of a number of small kids who



were thrilled to see the world of Monster Trucks and Need for Speed being unravelled before their eyes. Many of them even refused to go for lunch, preferring to watch the participants work with their soldering irons. As the volunteers started taking the racing track off, one couldn't find tiredness in their eyes, rather they were passionately chatting about how to improve the event for next year.

Pravega thus took its first baby steps forward.

Easter Egg Hunt

The Easter Egg Hunt was an online event designed to attract more people to the Pravega website, which it accomplished with great success: it gathered over 130 registrations, and who knows how many visitors to the website itself.

The event itself was a search for seven jokes and playful artifacts that had been scattered over the website (not actual Easter eggs or pictures of Easter eggs, as some participants mistakenly thought). The most dramatic and easiest to find, since it was given away in the contest announcement, was the game of ping-pong that, if “pravega” was typed on the home page, would start with the release of the blue dot of the Pravega logo. One of the remaining eggs was an ASCII art version of the v from the logo fittingly hidden in

the source code of the About Pravega page, while another was revealed when a user dragged out a v with the mouse on the Organizing Committee page, causing the core committee members’ photos to change to ones with them each holding a placard with a letter of Pravega. For the fans of Twitter, typing 140 characters on any page of the website would make the Twitter logo (a bird) glow, bounce, and chirp a tweeting sound, while early birds who visited the site between 6 and 7 a.m. would be greeted by a recording of the Venkatesha Suprabhatam. Thanks to the influence of a certain core committee member, a sixth Easter egg would randomly appear (with a 5% probability) in the form of the Pravega logo written in the Devanagari script. The final Easter egg was perhaps the most difficult to find and notice: one had to visit the page for the event Wordsmithy and hold down the shift key, at which point the description of the event would transform from mundane English to a swashbuckling pirate form of the language.

Though some of the eggs may sound difficult to discover, our participants rose to the challenge, with the winners discovering all of the eggs within 10 days of the event beginning—and by the sounds of their feedback, they loved the event. Well, we are just glad that no one ended up with egg on their face!

Math Events

Apocalypse Now!

So, the Pravega Math team took the idea of designing an event, a tad too seriously on this one. They literally created the Apocalypse Now! game engine from scratch!

Coming up with the idea, finalizing the details and coding for the same would’ve otherwise been a nightmare, but the team made it happen. The GUI was integrated with the game engine with help from the CSA department and the game was pretty much rolling.

Apocalypse Now! is a web browser-based game in which players are divided into companies and countries, with their respective goals being selling and buying of the drugs developed by the companies. Each category has its winner based on the profit earned in that category. The game is fairly complex and requires a lot of strategic gameplay to maximize one’s assets.

There was a preliminary written round for selecting the final contenders out of the 52 contestants. The finalists got to play the game against each other and fight for the win.

Crypto

What good are math events without sly references to Galois extensions?

Crypto was the team’s attempt at just that*.

The event, with 100 registered participants, was one of the most popular events around. In the preliminary round, the participating teams had to decode the cipher provided to them. With just six teams getting selected for the final round, the competition was intense.

The final round was a communication game, a spinoff to the Second World War scenario, wherein teammates had to communicate via codes without other teams getting to

know the content of the coded messages. Several additional conditions were imposed, like data loss in transmission and preference for shorter messages to spice things up.

Samasya

Nothing is better than some no nonsense good old paper and pen problem solving for math enthusiasts. Samasya was the realization of just that idea.

Samasya was essentially a written math olympiad that saw the participation of 52 contestants.

The problems posed could be approached by anyone with some basic knowledge of calculus, covered in 12th grade, but they were of course not easy to solve.

Publish or Perish

Publish or Perish was an event integrating the process of problem solving and research towards a major thesis question.

The event saw participation by 46 contestants. The participants were selected for the final round through a written selection round.

Physics Events

Armchair Physicist

Designed for physics-lovers with a knack for problem solving and an aversion for experimentation, ‘Armchair Physicist’ was the perfect event for budding theoretical physicists.

The event had a preliminary selection and sorting round, in which four teams were to be selected for the final out of 40 teams. The selection was based on the scores secured by the teams in the written examination, but it didn’t end there! The scores in the prelims determined the order in which the selected teams were to choose their thesis question out of the pool of four questions presented to them, and the order in which they were to present their solutions to the audience.

The teams then had to brainstorm over their respective problems for a period of thirty minutes and then present their solutions, in the reverse order of their score in the prelims. Other teams as well as the audience could

The final round had a rather exciting format. The finalists were arranged in different queues. They had to move up their queue by solving the problem at their respective level,

Nothing is better than some no-nonsense good old paper and pen problem solving for math enthusiasts.

the final level had the thesis question. The first person to solve the thesis question wins the game.

So in effect, it was a real time race to the final level where one could see everyone’s progress and thus could stack one’s position against other contenders.

challenge the solutions presented. Both the challenge and defense carried points for determining the overall score of the teams. Prof. Subroto Mukerjee made the judgments for the same.

Coming up with a solution to an arcane problem, only to be bombarded with more questions—the format certainly sends shivers down the spine. The participants, however, rose to the challenge and did really well.

Tri-D Chess

Forget the Ruy Lopez or the Sicilian lines you’ve always relied on, you can even forgo those precious gambits or traps that served you well for years, don’t even talk of positional play here, for this is definitely something that Green’s theorem does not talk about, this is hypermodern three-dimensional dynamic rapid chess coming straight to you from Star Trek!

The Pravega physics team, from its box of ‘mad-genius scientific ideas’, decided to include Tri-D chessboards in its bandwagon of sophisticated instruments, for the Pravega physics events; a tribute to Shannon perhaps.

*Hypermodern three-dimensional dynamic rapid chess coming **straight to you** **from Star Trek!***

The event witnessed the participation of 40 chess enthusiasts, who were in for a knockout sudden death tournament against each other. With the time controls set at 25 minutes with no increments per move, it was surely a race against time.

The tournament went on for four long hours with the participants drudging on; developing their pieces, preparing outposts and looking for combinations. At the end of all

the brainstorming, the event finally had its winner, and turned out to be a huge success.

Experimental Physics

Pravega hosted the Experimental Physics event as a hands-on physics event in which participants had to take on the roles of real scientists and investigate problems through the use of sophisticated scientific instruments.

There were four slots in total, of which two had already been claimed through an online quiz event. A preliminary selection round in the form of a written test was conducted, for the rest of the two slots. The seven teams competing in the prelims had to go through some really intense and grueling questions. Most teams were dumbfounded with the rather bizarre questions thrown at them, however, this did not deter the teams from fighting on.

After the declaration of the qualifiers from the preliminaries, it was time for the four teams to do some real hands-on work in the finals. The participants had to conduct experiments to look for the pieces in a complex puzzle using never-before-seen instruments and use their prowess as experimentalists to solve it.

One of the participants remarked, that it took some time for his team to get used to the instruments, but added that it was a pretty educative experience. Most contestants found the problems posed to be very interesting and the overall experience to be thoroughly enjoyable.



Swissnex Science Slam

Sponsored by

SWISSnex
India



Swissnex Science Slam, the event sponsored by Swissnex, promised plenty for the participants: Swiss chocolates, Swiss watches, Swiss bags and a trip to Swiss universities. That is a lot of Swiss, but then again, who doesn't like Swiss goodies? The organizers had displayed some level of cunning on their part when they decreed that participants would have to present their research within three minutes in the form of a stage performance, thereby forcing scientists out of their comfort zones. The esteemed jury consisted of the CEO of Swissnex, Professor S. V. Sankaran from IEEE . With complete freedom of expression, be it poetry, music, drama or dance, the event promised to be

a sure entertainer and boy, was it one! Sanjitha Sharma from IISc made her presentation on the dung of male Asian elephants, which are known as bulls, as the speaker was careful to remind us—the piece being a poem playfully titled “Bullshit”. Jay Bakshi did a rap rendition on ‘radiation hardening of ICs’. The stakes were high with the first prize being a trip to a Swiss university. The participant who wooed us the best was Megha from KSIT with a dance-drama on ‘Cost-effective procedures for electrooculograms’ that duly bagged first prize. Next up for grabs was a Swatch watch, which was taken by a team from DESE, IISc for their puppet show on ‘Crowd Sensing for Wildlife Conservation’. The third prize, a Swiss military bag full of goodies, went to Harisharan and Co. from IISc for their group mime on ‘2D Speech Analysis’. The event surprised us with participants full of joie de vivre despite the popular opinion that they would be nerds. The other participants returned happy with free chocolates and other goodies. Well, it was a science slam alright.

Cultural Events

Half a minute to Win it!

*“A mere Thirty seconds to sensationalize,
Of crisp dance moves and divine music to the ears,
Anticipation much, excitement more,
A chance like none other,
This, for the Thirty seconds that define the artist in you.”*

With only half a minute to expand one's repertoire with aesthetic tricks, it was a show of sheer talent and innovation. The participants bit into the best HAMs (Half A Minute performances) of their lives and made a mark. A plethora of talents was on display and the participants missed no chance to wow the audience.

The scene was perfect: outside the J. N. Tata Auditorium, an extremely enthusiastic audience and a one-of-its-kind opportunity knocking on the doors of the participants—we really couldn't have asked for more!

The performances brightened the afternoon's events with the participants shooting to glory and fame on the platform. The show came to a fitting end, with IISc UG's very

own Rashmi Ravishankar emerging as the winner for her fine and graceful dance moves, closely followed by Akhila from PESIT South Campus for her ooh-inducing belly dance and Aniruddha Acharya for his mesmerizing notes on the flute.

With the judges nodding their heads and tapping their feet, they relished every performance and were all praise for the UG community. Although one would have expected this event to be a crowd-puller, it was a powerhouse of talent packed in thirty second snippets.

Three cheers to the Pravega team for this exciting event!

Battle of Bands

IISc Bangalore was witness to a remarkable exposition of contemporary music in the form of the event Battle of Bands. On the hot afternoon in the midst of the barren expanse that is the IISc cricket ground, 11 bands arrived to fight it out among themselves and enthrall the audience

with their music. And boy, did they manage to get the audience's attention.

The event kicked off, after a lot of technical tinkering on-stage, at 2 p.m., with Angstrum, to a slightly lethargic and hesitant, and limited audience. They played two songs and their bass and rhythm guitar work was commendable. The vocals, though, were average. They made some noise, but drew only a little excitement from the crowd. Next were Chiasma, who made a brisk start, but ran into technical trouble midway. With very average vocals, they did not manage to make a convincing case. The party really started when Fantom, who were next, played some really good thrash metal pieces. They were clearly looking to please the crowd, and their raw energy, coupled with really strong work on the guitars and sinuous movements, got the crowd moving as well, and the vocalist growled and screamed till the audience were in ecstasy. The crowd was by then perceptibly larger. Up next were Spaghettify, who delighted the crowd with two really fresh original compositions. The main highlight of their performance was their powerful female vocalist, who definitely dominated proceedings; also worth mentioning was their drumming.

However, the real stars of the show were the next performers, the Fundametals. They were actually five eighth

graders, and they managed to put to the sword most of their opposition. They put up a highly proficient display, and their drummer and the lead guitarist and vocalist, were clearly talented. It was a lesson in competent rock performance to one and all, and that too by a bunch of school kids. They were so good that most subsequent performances paled out in comparison, with the likes of Draco's, Plethora and Apple Quartet finding few takers.

Among the ones that stood out positively were Ominous, who packed in decent stuff on the back of remarkably good drumming, and the Trash Talkers, who though they dressed their part, were neat on the guitars, and made some innovative music. The Bunnychans were acclaimed as well with an exceptional bass performance. As the awards were being declared, some of the IISc UG students put in a performance, a cover of Guns n' Roses' Sweet Child Of Mine. Finally, the results arrived, and as expected, the Fundametals won the first prize. Among stiff competition, Bunnychan bagged second, and Ominous grabbed third place. Among other prizes, Ominous won the one for Best Drumming, Spaghettify won Best Vocals, and Fundametals grabbed another with the award for Best Guitarist. All in all, it was a wonderful evening for rock lovers and performers alike and added another dimension of enjoyment into Pravega.



Lasya

The word ‘Lasya’ has its origins in the Shiva Purana (the tale of Lord Shiva) where Goddess Parvati is said to have danced the ‘Lasya’ in response to Lord Shiva’s ‘Tandava’. The word ‘Lasya’, by itself, means beauty and happiness. Therefore, it was to honour the gift of dance, its beauty and the happiness it brings that the dance event of Pravega was named Lasya.

After weeks of arduous preparations by the dance enthusiasts and dancers of IISc, Lasya kicked off on the first day of Pravega at Satish Dhawan Auditorium (SDA). The judges were seated and waiting for the dancers to begin when Siva Prasad, our very exuberant anchor for the day, took to the stage and announced the entry of the first group who grooved to a medley of peppy Bollywood numbers and western pop music. Following them was a group of daintily dressed girls from M. S. Ramaiah Institute of Technology (MSRIT) who incidentally also called themselves ‘Lasya’. With scintillating music, graceful expressions and beautiful lifts and formations, they awed the audience and told the poignant story of the unsung hero Jatayu, the great vulture from the Ramayana who had paid with his life for attempting to rescue Sita from Ravana’s clutches. Next on stage was a curious-looking group who seemed to have

marched in straight from the Zombie Apocalypse. They aptly called themselves ‘The Walking Dead’ and entertained the audience with their rather quirky moves and music. ‘Thrill-thrash’ was the name of the following group and they began with a short introductory story about a young girl whose passion for dance had been stamped out by society’s unyielding norms. Their soulful story gradually unfolded on stage to much applause and appreciation from the audience. Siva, soon after, came up to announce a short break during which the B-Boying crew—Kevin (from Black Ice) along with Shane and Shawn (Brothers of Destruction), treated the audience to their breathtaking manoeuvres and break dance. Last to perform was the team from IISc—Yaran da Tashan, a lively Bhangra group that made the audience groove to their loud music and thumping moves.

The event came to a close with the judges receiving their token of gratitude from the organisers and of course, with the announcement of the results. As the name of the winning group was announced, the audience burst into cheers and applause, conveying their approval of the judges’ choice. Very interestingly, the name of the winners also happened to be Lasya. Thus, Lasya had been a success—both as an event and as a team.



Science Quizine

The first of the two grand quizzing events of Pravega, the Science Quizine culminated with a great round of enthusiasm and appreciation from both the participants as well as the audience. The resplendent contest took place at the J. N. Tata Auditorium, the prelims commencing from 10 a.m. in the morning and the hall teeming with quizzing enthusiasts varying in age group from high school students to graduates along a distribution of around fifty to sixty participating teams, each team having a maximum of three contestants.

It was only later when the answers were finally released that most of the teams could gather a feel for the ingenuity and assiduity of the contributors to the creation of the quiz.

The preliminary round of quizzing began with quizmaster Basavaraj Talawar, known to most as BT, presenting twenty challenging questions on the screen one after the other. Participants had to write the answer on a sheet provided to them. It was a wonderful scene thenceforth, seeing everybody chattering to his or her teammates about probable answers to twenty targets of recognition. Few questions were seemingly memory-based at first sight, yet it was only later when the answers were finally declared that most of the

teams could gather a feel for the ingenuity and assiduity of the contributors to the creation of the quiz and the systematic arrangement of various notions that the questions pertained to. The questions in the prelims themselves were widely distributed over the concepts and applications of science so as to capture the attention of even the masters of the fields, though, all in all, they revered the spirit of the history of science and technology—the great innovations that have been given to the world by great minds working over all themes ranging from technical mathematics to comic strips to hardcore biochemistry.

The Finals were, to be true, even more intriguing than the prelims. Six teams were selected for the finals to participate in five rounds of engaging quizzing. The first and the last were pouncing rounds, the second and the fourth were buzzer rounds but the most ‘fashionable’ was indeed the third round called ‘Poker’. It composed of betting, just the way in actual poker, on the answers to the number of questions a team knew. Questions in the finals, as anticipated, were far more demanding than the prelims; yet the teams that eventually won showed great fervour in answering almost all questions. The audience also responded with great vivacity whenever a question was passed to them, partly, to be sure, in expectation of a flying Five Star or Dairy Milk to come their way! The winning team called themselves “The Unusual Suspects” and seemed so gloriously knowledgeable in almost every field of science that we could not but wonder in awe at the amount of knowledge that we still had to gain from an understanding of the world.

The first team was awarded a satiating prize of eight thousand rupees. The quiz ended with great applause and appreciative energy spread throughout the crowd for the upcoming delights of Pravega.



Lectures

Food for thought

Pictured: Dr. Mylswamy Annadurai

Lecture by Dr. Swami Manohar

Pravega fever had begun to set the campus alight right from the outset. The usually tranquil IISc environment was buzzing with excitement as the event turned one day old.

The Lecture series organized by the managing committee and BOSCH Foundation attracted a lot of attention with many people from IISc and outside coming to attend it. The first lecture was by Dr. Swami Manohar, erstwhile IISc CSA faculty and an academic entrepreneur, in IISc's Satish Dhawan Auditorium.

Dr. Manohar is an example of how science and technology aren't necessarily aloof to the problems of supplying basic human needs and comforts. He started off as an academic with a doctoral degree from a top US university and as a faculty at SERC, IISc. Soon, he turned into an entrepreneur by starting off his own company and coming up with a novel hand-held computer, the first of its kind, way back

in 2001. Aptly, he named it the simputer, a simple innovative multilingual people's computer.

*Shrug off the
biggest barrier
to innovation: a
reluctance to fail.*

Now back in his academic avatar, Dr. Manohar has started his new venture named JED-i, named for the Star Wars fan in him. It is an organization that ventures to spread the importance of innovation among young engineering undergraduates.

Dr. Manohar spoke at length about the importance of depth in engineering knowledge to come up with sustainable and innovative designs to meet human needs. Citing examples of companies making a difference in people's lives, he stressed the fact that people with technological acumen should convert contemplation over coffee into proper action, and should shrug off the biggest barrier to innovation: a reluctance to fail.

He conducted a small Innovation experiment with the audience, asking them to attempt making an inch-high laptop base using a single sheet of paper. Many people went

up to the table and tried it out, many failed while some structures succeeded. Finally Dr. Manohar showed how a structure could be formed, using the same single sheet of paper, in so intricate and rigid a manner that it could withstand upto 10 kg!

His lecture was an impressive and a highly motivational piece on how to think beyond the box, without forgetting what the box is. Much in accordance with the Pravega ideology, his lecture inspired the audience present to move forward by extending the frontiers of science. And to accelerate.

Lecture by Dr. Mylswamy Annadurai

The second lecture was by Dr. Mylswamy Annadurai, the present Programme Director of ISRO's Small Satellites Programme, which includes satellites such as the Mars Orbiter Mission (MOM) and Chandrayaan-2, and which also previously conducted the launch of the highly successful Chandrayaan-1. This lecture was held in J. N. Tata Auditorium.

Dr. Annadurai's talk was titled "Indian Achievements in Space Science and Technology", a journey of exploration into the frontiers of science. Through his lecture he radiated a deep sense of pride for our nation, which was evident from the way he started his lecture, by quoting Vikram Sarabhai, "We must be second to none."

True to the ever-optimistic scientist and engineer in him, Dr. Annadurai, in his lecture, while discussing about the technical difficulties in the Mars Orbiter Mission, never referred to them as difficulties, but rather as opportunities to attain technical perfection on a sustainable budget. He spoke at length about how they learnt their lessons from the Mars Missions of yesteryear and analyzed the reasons for their failures and how several parallel teams were working independently, yet with a certain sense of coordination, to solve these problems.

Apart from discussing several technical details of the Mars Orbiter Mission, he also talked about the scientific knowledge that he expects to gain from this mission, namely about the Martian environment, soil and several other physical characteristics.

This mission is far from being over, though. He told us that MOM is healthy now, and about halfway through its journey towards the Red Planet! He also mentioned the level of technical accuracy and correction measures needed for ventures like this to succeed.

*Dr. Annadurai
expressed a new
wish: **Mission to
the Sun by 2018!***

The talk ended with the ever-enthusiastic Dr. Annadurai talking about how the bar was raised from Chandrayaan to Mangalyaan in a matter of ten years. And not only that, he expressed a new wish.

Mission to the Sun by 2018!

Lecture by Dr. Vijay Chandru

As the audience settled into lecture mode, they were challenged by the thought-provoking speech delivered by Dr. Vijay Chandru, a former IIScian who is presently working in MIT. His talk was on Virtual Humans and challenges in biology. His work basically involves the conversion of biology from a phenomenological science to a predictive science. He attempts to facilitate breakthroughs in medicine using mathematical simulations.

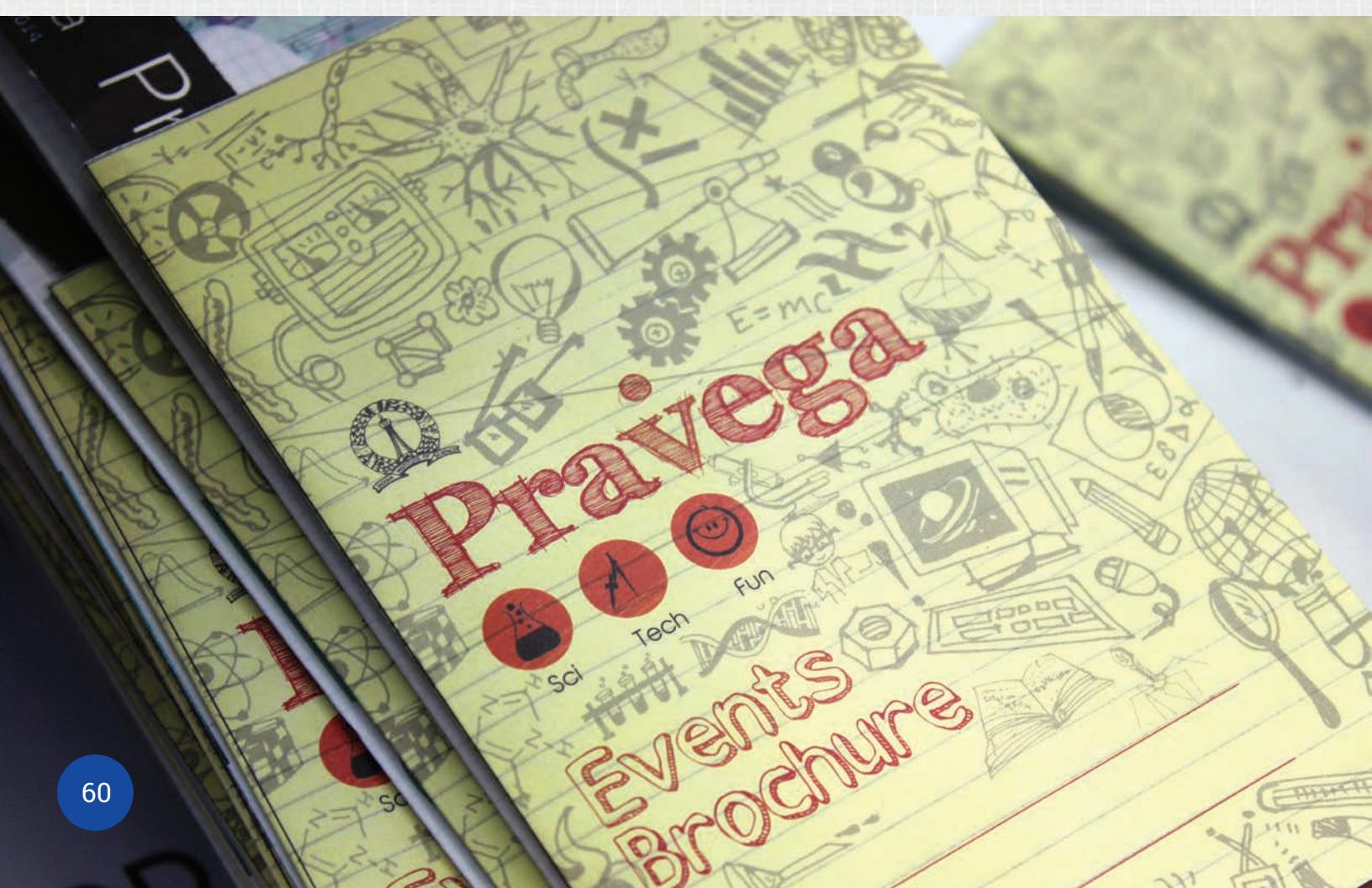
The challenges in modelling a living organism are vast and numerous, primarily because of the complexity associated with every living creature. Nevertheless, he has been exploring a very promising avenue of research in this area, coming up with an idea that could bring about a paradigm shift in biology. He works on modelling a full-fledged human liver that can be used to study different medical problems and come up with solutions to them.

Dr. Chandru spoke about how the model liver can be used as an experimental tool and how it accurately portrays

several biological phenomena like homeostasis. He went on to speak about DNA modelling and sustainable methods of genome mapping.

His talk ended with examples of how these new technologies have actually helped people under severe medical duress to recover. At the very end, he expressed his wish to achieve a more extensive understanding of the basic components of life through mathematical simulation.

As the day's activities drew to a close, the audience left the J. N. Tata premises with their appetite for cutting-edge research whetted, and each one of them anticipating another day of feasting on Pravega goodness.



Giggles!

Bangalore's only 3G clown

The first edition of Pravega had a very special visitor — Giggles, India's first therapeutic clown. Giggles would stroll up and down the streets performing tricks and amusing the participants. And of course, in true spirit of the festival, he would reveal the science behind his magic. Giggles was the star of the show for little tots who had tagged along with their parents. He would always be surrounded by frenzied little kids clamouring for his attention. And as for the participants who had to walk as much as a mile between competitions, Giggles was a much needed distraction for them too. With his inimitable charm, Giggles also managed to become the media darling of Pravega— he was featured in as many as four dailies!

But who is the man behind the magic? Quarks caught up with him in a candid conversation— Mr. Sanjay Balsavar.

A trained graphic designer, Mr. Balsavar's passion is magic and clowning. He is not just any clown—he is India's only therapeutic clown. Giggles frequently visits paediatric wards in the city and clowns to dispels the gloom that illness casts. "A happy child is a healthy child," observes Mr. Balsavar, his eyes twinkling. The little tots surrounding him seem happy indeed! "Will Giggles come tomorrow too?" asks a delighted Namrata, the six year old daughter of an IISc faculty. Her face shrinks as I inform her that she will have to wait a year.

As Quarks bids adieu to Giggles, he pulls a fast one on us by giving us his business card that seems to have only one side! Then grinning, he explains the magic, promising to be back next year. He gets into his car and drives away—in his clown costume—not a sight you get to see everyday!







Pronights
Tryst with Mazaa, Mauj and Masti

Nrityagram (31st January)

“Pravega” had been the collective fixation of all the three hundred and twelve Undergraduate students of the Indian Institute of Science. “After Pravega”, “Because of Pravega”, “In Pravega”, “Uff Pravega!”, “Ah Pravega!” had entered their lexicon; surely even without their knowing. Finally the labour of their love—Pravega, opened on 31st January 2014. And how!

This three day long Science, Tech and Cultural fest had a befitting opening ceremony, accentuated by the surreal Odissi dance performance by Bijayini Satpathy and Pavithra Reddy from Nrityagram. Nrityagram sustains the tradition Indian system of learning of classical dances—the Gurukul tradition, and has created a thriving community in the form of a dance village. This school of thought and practice was set up by Odissi dancer Protima Gauri in 1990. Odissi is one of the eight classical dance forms of India recognized by the Sangeet Natak Akademi. Its origin is believed to be two thousand years old in eastern India and embedded in various ancient fertility cults tied to ritualistic Hindu temple worship by women dancers known as mahari. The dance was also performed by young male dancers known as gotipua, who performed outside the temple. Like many indigenous dance forms, it used to be simply called nacha before its revival in the 1950s by dance scholars. Thus, the present dance form of Odissi is a product of national and regional revivalism.

The rendition of the evening that comprised of an enchanting blend of music, dance and light elated us, the audience, to the mesmerizing world of aesthetic gratification. The performers bequeathed us with all the rasas that Natyashastra entails. While the first composition Arpanam instilled awe by paying obeisance to Mother Parvati, the second composition Srimati aroused smgara with its celebration of feminine grace. The third was a composition on Kabi Surdas’ bhajan where the playful Krishna charms his doting mother Yashoda and the fretful milkmaid with his innocent banter. The fourth and last piece enthralled the over one thousand people present in the audience to such an extent that it received standing ovation with prolonged, robust applause. It was the poignant depiction of Sitaharan from Ramcharitmanas. I, for one, had tears in

my eyes and goosebumps on my arms watching the soulful performance. Be it the mischievous gait of the deer, the magnificent representation of Garuda or the discreet illustration of the ten-headed Ravana, Nrityagram in the true sense treasures and proliferates the rich Indian heritage.

The opening of Pravega thus told a tale of what the following days were to unpack. The promise of intellectual stimulation, challenge of skills and superlative entertainment has just unrolled. We, the teachers, take the back-seat with pride, savoring the unfolding of what the IISc UG programme strives to attain—all round growth of our budding scientists!

*The performers
bequeathed us
with **all the rasas**
that Natyashastra
entails.*

Dr. Bitasta Das
Instructor, Undergraduate Programme
Indian Institute of Science





Divine Raaga (1st February)

“PRA VE GA... PRA VE GA... PRA VE GA...” reverberated through the air as Divine Raaga took to the stage for the fest’s first pronght performance. Seven members of the band, like the seven colours of rainbow, mesmerized the audience and like the seven notes of music, spelt magic for the next one hour!

*The band surely
made the evening
true to their name
with their deep
soulful music...
Divine Raaga!*

Divine Raaga is a fusion rock band of Bangalore. Their performative style blends rich Indian music genres with western rock. We had the fortune to relish the band’s finest compositions. The songs presented the essence of the various Indian artistic styles—Baul, Sufi, contemporary in the western flavours. Ek, Banjara, Brothers, Teen Bandar, Maula, Barish were performed and are sure to echo in our minds for many days to come.

“Fusion” though today a term for commercial convenience, in the past, it has produced one of the finest genres in music, the jazz, which owes its birth to the mingling of various musical strains. “Fusion” has been loosely defined as an agreement amongst diverse musical forms and their merger into one another. Divine Raaga can rightly be said to locate itself at the conjunction of popular Indian music with rock. “Pay for the Arts” is a unique feature of the band. It is surreal in this consumerist world of artists not determining remuneration with the organizers. Instead, they rely on the audience to bestow whatever they wish after listening to their rendition. It took me several affirmations from the students to believe that indeed no money was paid. Boxes were sent out amidst the audience and they contributed

whatever they had to offer. For me, this in true sense is the worth of art where the connoisseurs offer whatever they can and will in appreciation.

Our UG students, for once, brought out the teenager in them when they swayed their mobiles’ lights to the rhythm of Barish and clapped to the beats of Banjara. They, of course, are IISc UG students and hence, by default, they sang Teen Bandar with laboratory precision! Surely Divine Raaga evoked the headbangers and rockstars in them, some of whom until then were limping, sore-throated and whacked after the entire day’s exhaustion. The band performed their last rendition—a stupefying instrumental extravaganza. But would they be let go so soon? “Once more”, “Once more...” jingle went around the audience and the band had to give in. They performed not one but two songs again. The band surely made the evening true to their name with their deep soulful music... Divine Raaga!

Dr. Bitasta Das
Instructor, Undergraduate Programme
Indian Institute of Science

Agam (2nd February)

It was the evening of the 2nd of February 2014. The final day of the phenomenon that was Pravega '14. There was a middling crowd at the cricket stadium, acting as an open-air stage for the whole fest, and it was steadily thickening. Volunteers and participants alike, made their way to in front of the stage, desiring release from the intense and gruelling activities of the day. Also arriving were fans who had come to observe the evening festivities as a standalone performance, among them a number of IISc students.

The performances were kicked off by a band going by Until We Last (and describing themselves as a one-man bedroom performance)! They played postrock, and their music was technically exquisite and remarkable. Some of their antics took the crowd by surprise. But they were playing soothing, slow music, and that was the last thing the crowd was looking for, and that took the sheen off their performance slightly. They played a few songs before the crowd made its impatience known, and then made way for the evening's piece de resistance.

Enter Agam. Agam is a popular band, and well-known in Bangalore. They play Carnatic progressive rock, and they have already released an album of their music. On that particular evening, they took their place on the stage with all the intentions of putting up a fine show. And put up a show they did.

They started with "Brahma's Dance", and the performance quickly put to rest any doubts as to their abilities - they were technically rock solid (pun intended), as well as capable of the odd moment of creativity or improvisation that so brings to life a live performance. The crowd was getting into the mood, swaying and shaking to the music. The band was at the forefront of this restlessness, jerking and jiggling to their own music, and waving their hair. After the first, song, Harish took the audience to task, announcing the band's arrival and goading the crowd into making more noise.

They next played "Dhanashree Thillana", a song with heavy riffs and a very exciting tune and rhythm, and pretty soon the people were all jumping, soon raising enough dust to create imminent respiratory arrests, but then it wasn't like anybody was caring at that point. They followed it up with

"Sangtoshi", which was announced as a new creation, and of course it fell on favourable (and slightly breathless) ears.

The next song was a rabbit out of the proverbial top hat. Called "Mukammal", it was a qawwali song set in company to a very retro tune, indicating to everyone that these people took their fun seriously. It was surprisingly catchy. The next song, "Swans of Saraswati", was not quite as catchy but was technically rich, a fascinating melange of rock and orthodox Carnatic music. The crowd was lapping it all up, clapping to the beat, and jumping along. Some people were headbanging (or trying to).

The ambience was incredible—people screaming and jumping, lights flashing, the music overshadowing it all.

They next performed arguably their most famous song, the Boat Song. And the audience got to sing along. The ambience was incredible—people screaming and jumping, lights flashing, the music overshadowing it all, the unison of a thousand bare voices in chorus; and managed to transport us into a new kind of bliss, a sort of timelessness that topped every other feeling I'd had during the day.

The fun was not yet over though, not even when we'd cried ourselves hoarse, some of us having lost our voices. The next thing in their bag was a cover of A.R. Rahman's Dil Se, an immensely popular song, made even more appetising by the euphoria gripping the crowd. They sang along to this as well. Next up was a cover of the very popular Tamil song Aaromale, and this had a large number of very vocal

takers among the crowd as well. This was followed by another cover.

The band then even managed to take a break of sorts, Harish making a song out of a few lines of poetry, replete with ‘wah wah’s. Their next song was an exquisite blend of light rock and Indian classical music combining a plethora of instruments, called the “Malhar Jam”. Needless to say, the crowd was completely bonkers at this point, screaming and hooting and jumping to everything.

The band were now making to leave, but no sooner had they voiced their intentions than they got caught up in the

bane of live performers worldwide - loud, plaintive cries declaring “once more”. To their credit, Agam acceded, and we were treated to a second serving of Dil Se, signalling a fitting end to a perfect evening. The crowd slowly dispersed too, with dusty and sweaty clothes, numb ears, and hoarse voices, a fitting end to the three-day extravaganza that was Pravega. That was to take nothing from Agam though. They came, they sang and played, and they did indeed conquer.



Waxing Nostalgic

Ups and Downs on the Pravega Highway

"Sometimes leadership is planting trees under whose shade you'll never sit. It may not happen fully till after I'm gone. But I know that the steps we're taking are the right steps."

-Jennifer M. Granholm

The Chief Coordinator Pranav Mundada agrees wholeheartedly. The three-day festival in 2014 was the first reassuring glimpse of the seed that had been carefully planted and incubated for over a year. With this success, Pravega has now tided over the most uncertain part of its existence. The seedling will soon grow into a sapling and finally to an expansive tree, its branches heaving with the weight of hanging fruit. But who takes the bouquets for this first breakthrough? "The entire team, of course", says Pranav. Indeed, kick-starting a fest is an enormous exercise. Attracting funding, building a brand identity, thwarting competition, running a media campaign—it's not very unlike getting a company running. Nevertheless, the founding team of Pravega—Pranav, Aditya, Krishnan, Sampada, Himani, Suhas, Milind, and Apaar, enviably tackled this unenviable job—and had fun along the way! Differences were repaired, new friendships were forged, old friendships were strengthened, skills were shared — the team came together like a jigsaw puzzle. "We were all driven by a manic madness to see Pravega materialize", says Suhas Mahesh. Sampada shares her opinion—"Pravega was my oxygen for a year", she quips. For one whole year, Pravega completely appropriated everybody's mental faculties — the mess table would be abuzz with sponsorships strategies, publicity campaigns would be chalked out while walking to class and sometimes chits would be passed around in middle of lectures! Indeed, some of the best ideas really came during these informal discussions. During the (usually nocturnal) team meetings, vigorous discussions would be held and emotions would often run high. Discussions on subtle aspects of the fest would sometimes run for as many as six hours before they were finally terminated, not

by a successful conclusion, but by loudly protesting stomachs! "This eye for detail that the team showed probably takes the credit for Pravega happening without any major hiccoughs," Sahana points out.

Discussions on subtle aspects of the fest would sometimes run for as many as six hours.

Of course, Pravega was not all about armchair antics—there was plenty of fieldwork involved. And that was where the real fun began! Pranav Mundada gleefully reminisces the time when the Deputy Consul General of Germany, Hans Loeffler took them to a football match happening in the city. "He also took us out to lunch at the JW Marriott", he adds, grinning like a Cheshire cat. One of the team members who is reminded of the free ice creams that sponsor Rock Stone gave out to the team beams that it was one of the best things about working for Pravega. A Potterhead in the team remembers being thrilled to bits when the 3D printing partner, Cycloid Systems, printed him a time-turner. "It was fun visiting their office. I got to see many kinds of 3D printers in action", he says. Krishnan says that it was a unique experience for him to interact face to face with the CEOs of so many companies—something he would never have imagined before! Milind, who had been a semi-regular quizzer, remarks that it was a treat to work with the quiz masters this time, and to come up with new mind-bogglers

ourselves. Working for Pravega came with other perks too. All the volunteers were given Pravega T-shirts. Committee heads additionally got personalized hoodies sponsored by the merchandise partner. Several team members went on free rides around the town, sponsored by luxury cab service Uber. As always, the flipside existed too — classes were missed, lunches were skipped, grades slipped and sometimes professors were miffed. In addition, the team

Classes were missed, lunches were skipped, grades slipped and sometimes, professors were miffed.

would be in a perpetual race against time. Sampada recollects starting her day by having a meeting at 7:30 AM over breakfast. After attending classes, she would be back to work, sometimes retiring as late as 3 AM! Despite this grilling schedule, the indefatigable Sampada insists that it was a fantastic experience. “The biggest thing Pravega taught me is that nothing is impossible. I also learnt that while working in a team, it is important to keep the team together with you at every stage”, she says. Krishnan has a different takeaway from the experience: “The experience that I got in dealing with people will surely help me at every stage in my life, be it research or anything else”, he opines. Many others felt that working for Pravega helped them develop a closer rapport with their juniors. Clearly, Pravega has left the team with happy memories. A large chunk of this post-Pravega happiness, Suhas suspects, stems from an exquisite chocolate cake that was sent to them on the day after Pravega. It was accompanied by a handwritten note from an anonymous admirer:

Teamwork defines success.

Here is a small gesture of appreciation towards the planning, endless jugaad, being patient and making things happen!

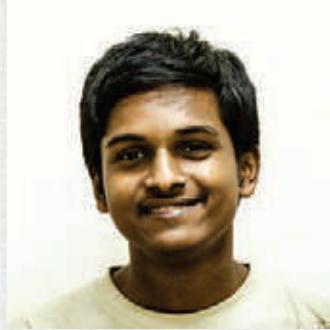
Team Pravega rocks!

Sahana chuckles and adds that the cake did much to fill the gaping void that she felt after Pravega was over. The identity of that mysterious well-wisher, however, still remains a mystery.

Pravega 2014 is now over and the baton has been passed on to the new team. The new team inherits a solid foundation, but bears the responsibility of raising Pravega to greater heights. Upon being asked for that one clinching bit of advice for the new team, Pranav rounds it off nicely,

“If you knock on enough doors, one will open.”

And that—everybody agrees—has been the defining spirit behind the team of Pravega 2014.





The organising team of

Pravega 2014

A Look to Next Year

Miles to go before we sleep

Of all the memories that I have of Pravega '14, the ones that come clearest to mind are from the one or two days prior to the fest itself—scenes of people dashing from building to building well into the early hours of the morning, spending every minute putting their finishing touches to the event, and dreaming of Pravega in the few moments when they weren't working for it. For some members of the organizing team, their faces were starting to seem decidedly zombie-like: I remember Suhas, for example, saying he had had a total of a few hours' sleep the previous few days (it appears he had spent his severely limited bedtime hours staying up at an all-night concert during that week, for reasons best known to himself, but the point remains).

So with all the desperate work that was carried out right until the fest ended, Pravega now resembled a marathon with a long sprint finish. Quite naturally, at the conclusion of the fest, the people who had been running for the past sixteen months celebrated the end wildly, relinquishing their responsibilities with a delirious joy, which you can still see in their faces months later.

For others, however, such as myself, who had cheered the others on for most of the time and joined the effort rather towards the end, these memories have, perhaps strangely, been a powerful motivation for doing our bit in the second edition of Pravega. Scarcely had the fest ended than we had begun discussing ideas to improve it the next year. As this is being written, less than two months after Pravega '14, the machine is whirring again. A new legion of volunteers is in place, and where there was hope around this time last year, there is now a confident expectation, from outside the campus, from the rest of IISc and most importantly, from the undergraduates themselves.

The struggle last year was to put up something; this year will be about putting up something big, reaching as wide an audience as we can manage and thoroughly wowing the crowds when they come in. Pravega was highly successful as a technical extravaganza in 2014. Next year, we'll take it

and deep fry it in some good old festive essence: the events will be more adventurous and more accessible to the general visitor, whether technical or otherwise. The cultural events made a much bigger impact this time than their smallish number might have suggested; one of our goals next year will be to tell the world that IISc understands its culture not only in the lab but also on the stage. Pravega will be a bigger online presence this time around, and the events will have the publicity to back them.

One of our experiences this year was that to the outsider, a fest is much more than the three days during which they are hosted on campus: they want to feel engaged well before they arrive at the institute gates. To that end, we will hold several more events in the lead-up to January '15. There are many things we all admit we could have done better in our first attempt; one of the main reasons some of the more ambitious plans couldn't be made to work was our severe shortage of manpower. With the arrival of the new batch in August (take note if you're reading this, fellas) the UG community will, for the first time, be at full strength, and there is no doubt that this will enable us to go from being good to being simply sensational.

In the first General Body Meeting for Pravega '15, I remember people smiling when Vamsi said, 'It's going to be fun, fun, man, so much fun, you're all going to love it,' out of the blue from the corner—and he, like so many others, had been in zombie mode for several weeks prior to Pravega. Funny.

I certainly wouldn't be alone in agreeing with him.

Naren Manjunath
IISc UG Class of 2017

A nanopolian view

An excerpt from Prof. Abinandanan's blog

I know quite a few of the Pravega team members, and I also know they have been putting in tons and tons of work for well over six months. I have also seen (perhaps a very small part of) their capacity to not only plan and organize an event of this scale, but also negotiate through the many tight spots they have faced along the way.

Here's wishing the Pravega team all the best!

While IISc did host such fests earlier (there was Vibrations in the nineties, and Miditha in naughties), Pravega is special because of its sheer scale and because it's the first fest led by our UG students.





An Interview with Tapan

Chief Coordinator of Pravega '15

Preparations are underway for Pravega 2015, to be organised in the third week of January 2015. With the experience of organising the maiden event meticulously and a fresh class of students joining this August, it is Advantage Pravega. Heading the Core Committee is the affable Tapan Goel, a third-year Physics Major. Speaking to Aravind from Quarks team, Tapan gets candid on the prospects and expectations facing the organising team, and talks about the challenges of putting up a college fest starting from ideas and getting the multitude of students to participate in our annual fest.

Quarks Team (QT): How does it feel to be working with a new team for Pravega 2015?

Tapan Goel (TG): It's great, it's good fun, and everybody is very enthusiastic. So, it is a lot of fun to be working with people who are so willing to do stuff ...

QT: Pravega in 2015 and in years to come, will have all the (four) batches of the BS program willing to lend a hand. That's an advantage.

TG: Yeah, definitely. One of the biggest pinches last year was the shortage of people. From this time onwards, we have more hands, plus more brains (smiles). Things will definitely be bigger and better. It will be easier to organize.

QT: The second edition of Pravega will obviously have greater expectations. It is the beginning of, if we may add, "the accelerating phase". How is the team gearing up for this?

TG: This time we plan to reach a wider audience. Last time, there were a lot of great events but reaching out to colleges and publicizing properly was where we lagged, due to lack of time. So that is definitely one area where we are looking to improve. Plus, naturally we are looking to have better and more interesting events. Then this time we plan to involve a lot more fun and informal events unlike last time, when we had events, which were 'hard-core', that is, very closely related to the subject. This time we plan to draw crowd who are not as interested about a particular subject, but just generally, they would like to have a couple of days off, learn a thing or two ... that kind of a thing.

QT: Do you have any plans for showcasing IISc's research in a big way?

TG: A lot of that particular aspect actually depends on what kind of permissions we can get from the administration. For example, one of the ideas that came up was to hold all events of Pravega at the J.N. Tata Auditorium area which makes it easier to organise. So, that is an idea. At the same time, as you said, we would like people to go around a couple of labs and see a few departments. That will depend on the number of people volunteering to organise this, subject to the consent of the administration and the professors chairing the respective departments.

QT: What is the biggest challenge before the team in organizing the fest?

TG: The real challenge before us now is to figure out what exactly needs to be done (laughs). This is the time for doing our homework, figuring out what needs to be done, getting many proposals and ideas, and sorting out the best ones. I think serious work in terms of outreach will commence in the summer break. And, the work for events is actually going on quite well and I hope that, starting from the middle of summer, we would be able to start running a few online events. Into the next semester, by October or so, we should be ready with our events, properly. But the current focus is to make sure that we have as many ideas as we can so that we have a big pool to select from.

QT: Big performers, especially sportspersons, have with them attractive snappy one-liners to please the inquisitive journalist while they themselves are unshakably grounded in the fabled 'zone'. In conclusion, do you wish to add something like that?

TG: Okay, (laughs) not really, because the thing is there is no general public to entertain, this particular interview will reach the IISc crowd and they are all players in this game. We all understand what the situation is, they are really working towards it. I don't really see that we need to have a statement ...

Just that, you know, we gave a proof of concept last time. Now let us really make it bigger. (Signs off)



R

A Home Away
from Home

IV

- 80 वन्दे विज्ञानमातरम्
81 The Demographic Spectrum
of IISc UG
84 The Old Physics Building
90 A Portrait of the
Undergraduate as
a Researcher
94 Foreign Opportunities
100 The Pink Pen and
the Broken Piano
108 The Games we Play
114 A Day in Bangalore
116 The Bicycle Baba
122 Getting to Know
Your Aam Aadmi
136 In His Own Words
144 A Necessary Evil vs.
Sacrifice for the
Greater Good

वन्दे विज्ञानमातरम्

नमस्ते शृङ्गमयि जननि ! वागुत्तमनिवासिनि !
तमस्कतारिणि! श्रुतिविनयविवेकाधिधारिणि !

गुरुवर्यसुसर्जितं ज्ञानं कुशलविद्योपासितं
सुलभतया सुविस्तृतं सुन्दरतया सुचर्चितं
कौतुहलाग्निना सिञ्चितं परोपकारेण समृद्धं
अभ्युदयाय समर्पितं नवोद्घाराय कटिबद्धं

नमस्ते ॥

भवसागरे त्वं तितीर्षा कर्मतीर्थस्य च चिकीर्षा
ज्ञानविद्ययोः समीक्षा धर्मबद्धानां च त्वं परीक्षा
अनुप्रयुक्त्यां त्वं विभूषा तत्त्वयोगस्य त्वं मीमांसा
सत्यान्वेषणस्य जिगमिषा सर्वलोकस्य त्वमास्था

नमस्ते ॥

प्रणवः गुप्तः (मूकः प्रेक्षकः)

The Demographic Spectrum of IISc UG



425 students,
29 states.

College life comes with its own perks, prominent among them being building acquaintances with fellow students whose cultural backgrounds are diverse, thus embarking on a life-long appreciation of diversity. It is widely observed that the best places to study attract talented students from around the globe, from all nationalities, ethnicities and political views. Indian universities do not fail to make a stunning variety of young Indians from equally diverse backgrounds a part of themselves.

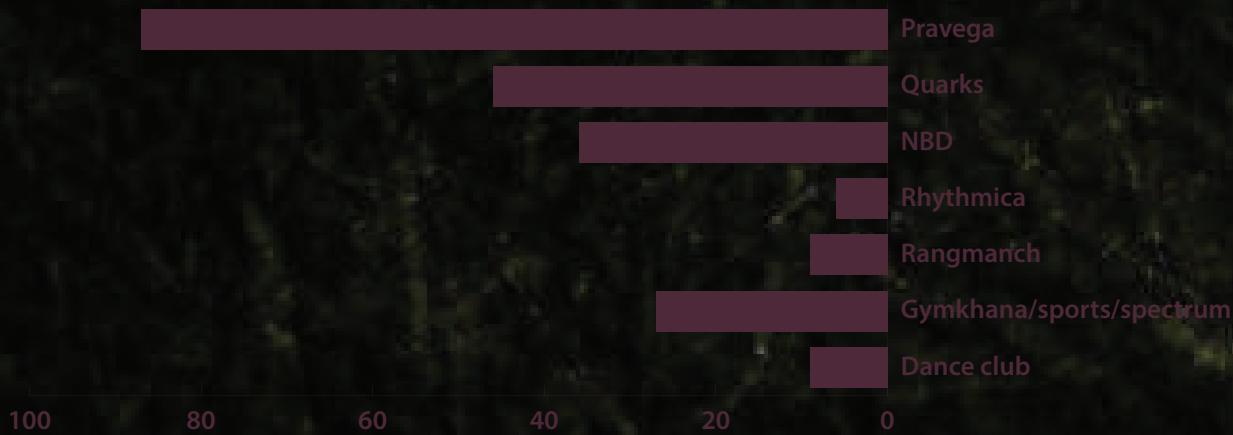
We set out to find the patterns of cultural background of undergraduate students in our institute. Our observations are based on a web-based survey taken by the undergraduates that collected data about their places of origin, food, language, religion, arts and sports they are familiar with. We believe our results find application in many fields concerning Indian students, ranging from being A freshman's guide to survive Culture Shock in college to helping proprietors of local eateries in making menus that please one and all. Being the premier science institute that we are, we

are proud to have friends from every corner of the country. But the majority of students are from the states of West Bengal (surprise, surprise), Karnataka, Kerala and Tamil Nadu. Such a geographical segregation is not in order but some signs can't be overlooked. People learnt to 'eat' everything: eat rice, eat fish, eat tea, and eat water. Masala dosa (notwithstanding bad pronunciation) has earned a cult status. Plus there are delicious sweets and sumptuous feasts (open to all) on Onam, Pongal and Ugadi because, 'People who love to eat are the best people.'

Not only do we eat different, but we also speak different—30 languages are reported to be known among the 112 students, to talk, read and write. The list includes most major languages of India and the prominent European languages like French, German, Spanish, Italian, etc. Everybody is at least a bilingual, with a maximum of as many as nine languages are known to a student.

Unsurprisingly, everybody knows English. But it is interesting to note that it is the language of choice of 50 students (44.6%) over their mother tongue.





Next in the list is Hindi (105 ticks), which nearly 40 percent report as their ‘third language’ and to only 22 percent it is the language of first choice. Sanskrit, arguably easily relatable to anyone who speaks in a vernacular, is known to 20 students, only as the third language and beyond.

Our subjects have applied themselves with mighty force to enliven the sports culture in the institute. Our skilled sportspersons who had also played in state/national level competitions as junior players give a run for the money to the professional known to the rest as a Ph.D. student, if not defeat them to steal the honours.

If you had thought students would stop playing computer games as they grow up; oh boy, you were wrong. DotA 2, Counter-Strike, Age of Empires and Elder Scrolls are few of the regularly-played games in our undergraduate community, including the fairer sex. You can in fact find in-house tournaments conducted for FIFA, which is by far the most fun game to play.

Non-conformity to religion is as clear as day. Only 25 students of those surveyed are found to follow any religion. Surprisingly, the majority are non-conformers who do not identify themselves as atheists or agnostics. Reading through their responses, we are tempted to quote from a movie we watched recently:

“Look, we have two simple choices. We can get all bent out of shape intellectualizing or bench-pressing logic, or we can simply relax and enjoy it. I can listen critically, but I don’t have to make up my mind about anything.”

The promising successes of UG initiatives, Pravega and Quarks, that are now identified with the in-

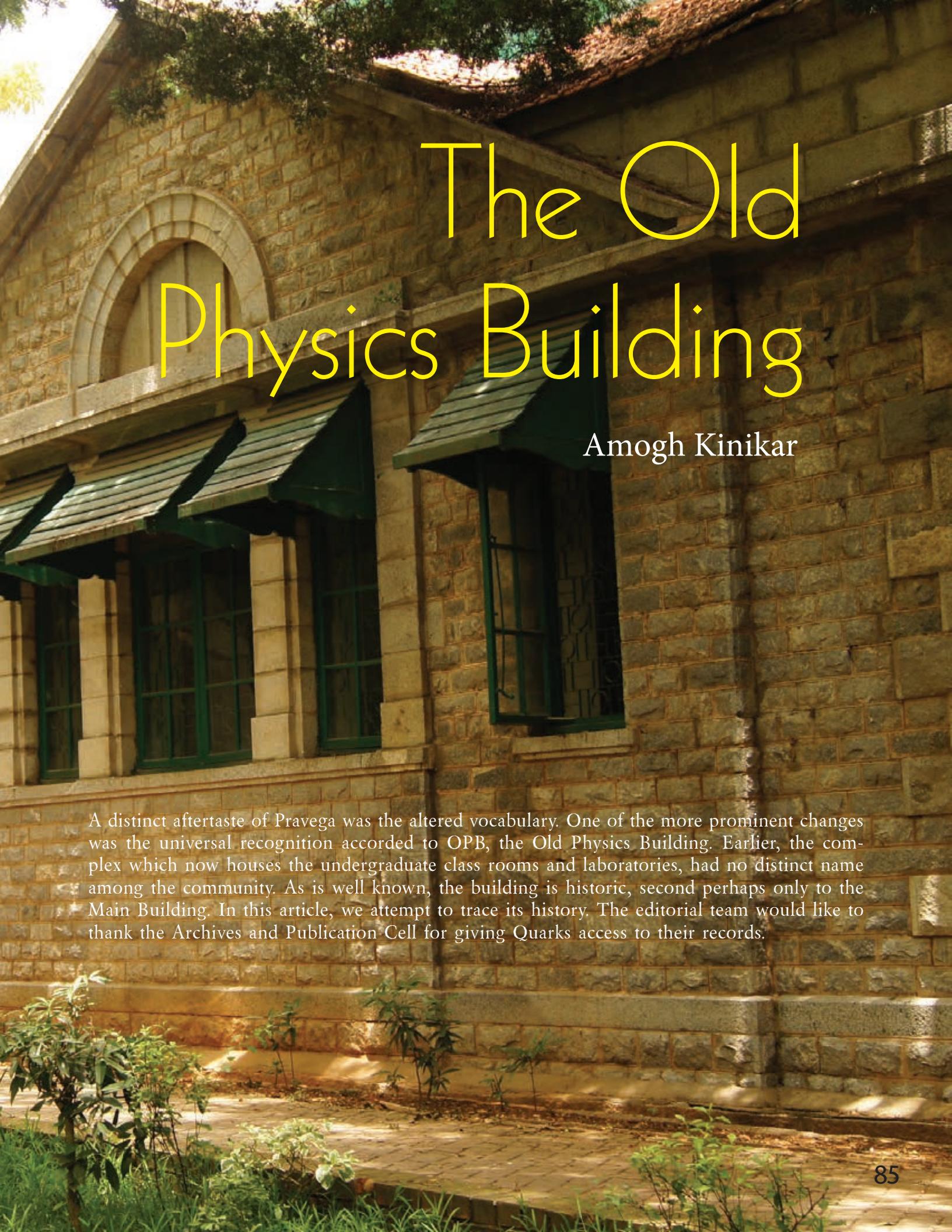
stitute itself, are due to enthusiastic participation of undergrads. Seventy seven percent are a part of Pravega at some level; forty one percent are associated with Quarks. Besides, they are also active members of music, dance, theatre and photography clubs.

So much for culture that had its beginnings before joining college. What happens in college is a synthesis of distinct cultures—a confluence of ideas that are otherwise separated by barriers of space, time, tradition and language. College forces one, faced with a mosaic of cultures, to build a liberal narrative appreciating life itself. Musing on others’ lives, we discover our place in the bigger scheme of things.

In search of the ‘aam’ undergrad:

The average undergraduate student is a dude from the city who is perhaps seeing a hostel for the first time. He can make his way throughout the country with his mastery of 3.7 languages plus a rich supply of mnemonics (*Swalpa adjust maadi*). He is against religion in the Dawkinsian sense but you will be in for a lecture should you prod him further. He is an active participant in the clubs of IISc and has been an important volunteer during Pravega. He is serious about outdoor sports but computer games are his favourite. It is sufficient to say, for want of word economy, that our guy has respect for all kinds of tasty food. ■





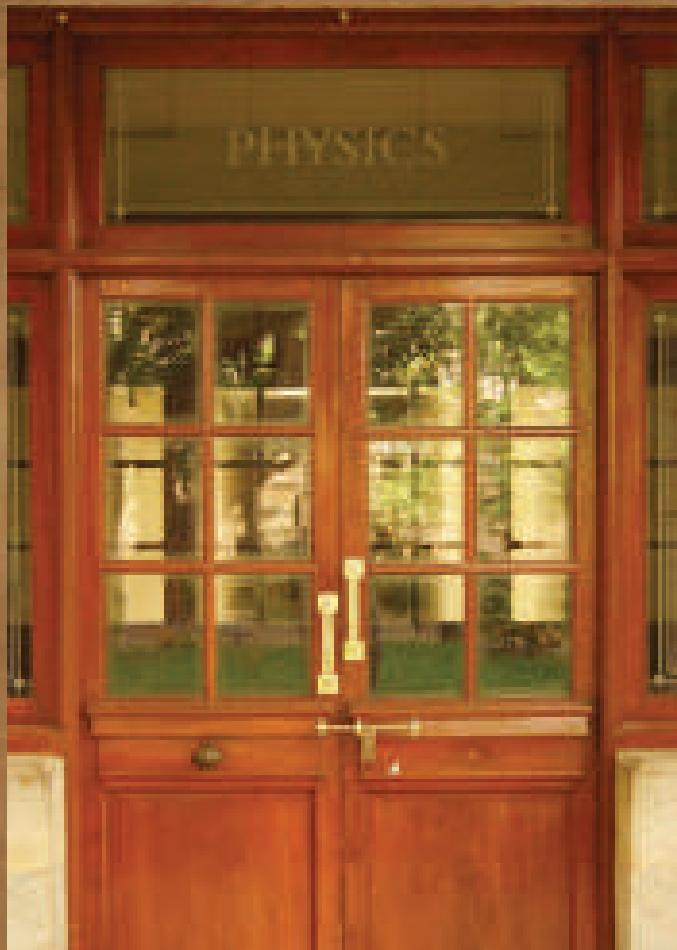
The Old Physics Building

Amogh Kinikar

A distinct aftertaste of Pravega was the altered vocabulary. One of the more prominent changes was the universal recognition accorded to OPB, the Old Physics Building. Earlier, the complex which now houses the undergraduate class rooms and laboratories, had no distinct name among the community. As is well known, the building is historic, second perhaps only to the Main Building. In this article, we attempt to trace its history. The editorial team would like to thank the Archives and Publication Cell for giving Quarks access to their records.

The foundation of the Indian Institute of Science marks an interesting period in the annals of scientific education in India. The vision and monetary impetus was provided by J. N. Tata, whose dream unfortunately did not come to fruition before his death in 1904. The statement in his will called for a research university, unlike the teaching universities present in the presidency towns. The patriot that he was, he wanted the institute to solve problems of the Indian populace. His sons, Dorabji and Ratanji Tata, aided by Burjorji Padshah, were the executors of his will. It is to be noted that both the sons, unlike Padshah, were not part of any discussions pertaining to the formation of the Institute before his demise. Thus the only link between J. N. Tata's vision and its execution was Padshah.

Padshah was a gifted polymath; his interests ranged from theosophy to the mathematical aspects of general relativity. Being an intellectual, he opined strongly on various matters and had great sway



Mumbai cost more than four crores).

The Englishmen involved felt that the immediate need of India was an institution dedicated exclusively to science and industry. Padshah felt that the institute should also cater to Indian arts and philosophy. The Government (which in the 1900s was run by the English) however did not approve, and the founding departments were Electrotechnics

over the minds of the Tata brothers. The institute had three principal benefactors: the Tatas as executors of J. N. Tata's will, the Government of India and the Government of Mysore. It was agreed by all to set up an institute; however, there was great disagreement about the nature of the institute. The Tatas felt that as they were providing a significant endowment, they had the strongest say in the matter (the endowment, properties in Bombay, amounted to an annual donation of more than one lakh rupees, and was a magnificently munificent gesture, although to bring it in perspective, the Taj at



(which was housed in what we today call OPB) and General, Inorganic and Organic Chemistry (housed in the erstwhile building of Biochemistry). You might rightly be wondering what has this to do with OPB. Padshah had made a strong case for including Archaeology as one of the founding departments; it would probably have shared the building with Electrotechnics, till the latter moved out, and we would have ended up with an OAB.

OPB was thus the site of the clashing of titanic egos, even before it had a corporeal existence. It played a role in the resignation of two directors of the institute¹ : Morris Travers and Sir C. V. Raman.

Morris Travers was an outspoken romantic, a caring husband who taught fishing to his wife and a loving son, writing very regularly to his mother. Curiously, he was among the 110 invited guests at the coronation durbar. It is curious because these 110² included the likes of the Members of Viceroy's council, the Chief Justices of the High Courts, the residents at various principalities and their wives. Travers attended the Durbar in his capacity as the Director of the Institute. We, as students of the institute, might



feel smug about the relative prestige of our institution, but it caused great resentment against Travers, across the rank and file of the officialdom in the nation.

While Travers was travelling on a vacation leave in England, he was accused of malpractices in the construction of the campus. The contractor and the engineer were summarily disposed off. Various other controversies ensued during the directorship of Travers. He had to finally leave the institute, leaving when the granite structure of the main building was only partly done and OPB was barely finished.

Unlike the present times, the institute did not enjoy complete administrative autonomy, with every decision being questioned by the Council of the Institute. The council consisted of a few academics, representatives of the Tatas, the government of India and Mysore. Travers called it the "stupid council", its members as far spaced as Shimla and Madras. The dichotomy of administrative control³ proved to be the Durin's Bane for Sir C. V. Raman as well.

OPB was then the seat of the department of Electrotechnics. In 1933 when Sir C. V. Raman took

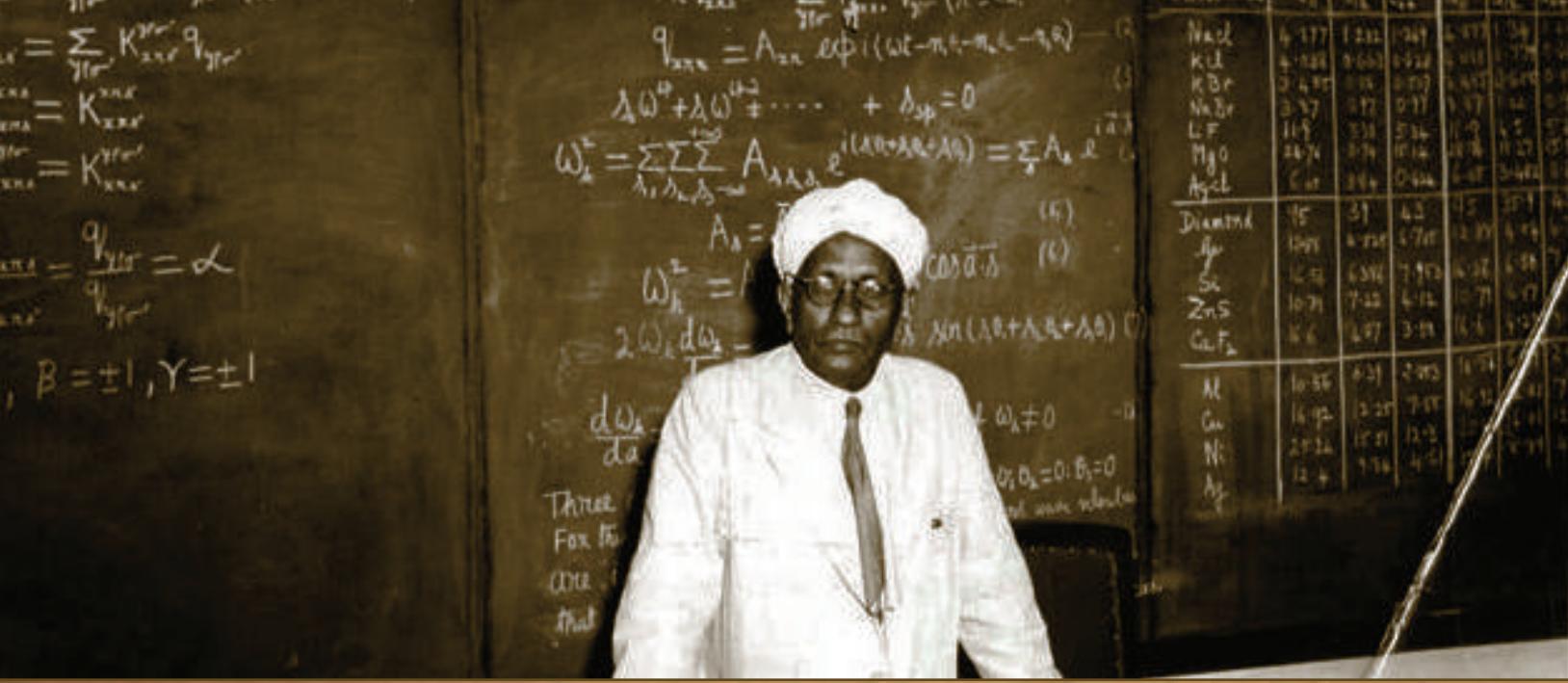
Morris William Travers worked with Sir William Ramsay at the University College, London, in the discovery of xenon, neon and krypton. In 1901-1902 Ramsay had been asked to advise the Indian government on the founding of a science institute. It was Ramsay who suggested Travers as a possible director for this institute and in 1906, Travers was appointed as the director of the new Indian Institute of Science.

Source: Bawn, C. E. H. (1963). "Morris William Travers 1872-1961". Biographical Memoirs of Fellows of the Royal Society 9:300

¹ At least

² I cannot help but make a comment about the Durbar. Held when the country was facing one of its severest droughts, it was heavily criticised for being an ostentatious waste of public money. Morris Travers writes: "It was said that the cost of the little outing was of the order of £1,000 a head of the guests. Whatever the cost, no entertainment was better organised or better arranged in every way."

³ A member of the Council, Burwa Katar Singh writes on why the Institute is unable to function properly in 1937, "... the institute is controlled by a majority of non-scientists who come to Bangalore three or four times a year."



"When the Nobel award was announced I saw it as a personal triumph, an achievement for me and my collaborators—a recognition for a very remarkable discovery, for reaching the goal I had pursued for 7 years ... I felt truly humble when I received the Prize from King Gustav; it was a moment of great emotion but I could restrain myself. Then I turned round and saw the British Union Jack under which I had been sitting and it was then that I realised that my poor country, India, did not even have a flag of her own—and it was this that triggered off my complete breakdown."

over as the Director and head of the department of Physics, there was no separate building which could be used for the department. The Physics department thus started out of the main building. It was housed initially only in the ground floor of the west wing. The east wing had the laboratories of Bacteriology. These were later shifted to the Chemistry department to the east and the entire ground floor⁴ became the Physics department.

Raman's primary objective was to establish the Institute as a leading centre for research in physics. In his singular passion for physics, it was felt by certain faculty that their field were not getting enough attention from the director. He tried to establish a chair in theoretical physics, which was first held for a period of six months by Max Born. Despite his best efforts, research in physics at the institute always remained mostly applied in its nature. Any physics laboratory worth its name requires a workshop, where special apparatus can be fabricated. It is in the demand for a workshop that sparks flew.

Raman proposed that a central workshop building be constructed. This also meant that the workshops present in the existing departments would be shifted to this building. The move was opposed by F. N. Modawalla, the department head of Electrotechnics at that time. He suggested that the entire central workshop be put under the department of Electrotechnics, a suggestion which Raman did not agree with. The central workshop came into being, and Modawalla resigned⁵.

The OPB remained with the department of Electrotechnics for as long as Raman was at the institute. So despite the claims made, Raman never really performed any experiment in the OPB. He did his experiments in the main building. The main building, also housed for some time the Cosmic Ray Research Unit of Homi Bhabha, in the verandah behind the Faculty Hall. OPB became the department of Physics, much later, after the construction of the various departments of Electrical Engineering. ■

⁴As well as all the rooms in the basement of the main building, which served as "Dark Rooms" for various optics experiments.

⁵Modawalla resigned along with H. E. Watson, the head of the department of Chemistry. The reason for their resignation was "undue interference in their departments by the Director". These resignations in 1933, during the start of Raman's directorship were just an indication of the tumultuous times to come.



Second Home of the UGs

Research

observation
probe
study
analysis
quest
experiment
investigation
search
audit
review
trial
exploration
control
assay
inquiry
tryout

A Portrait of the Undergraduate as a Researcher

(*A take on understanding the dynamics of the UG research scene*)

Subbulakshmi S., Pranav Kantroo and Sahana D. Rao

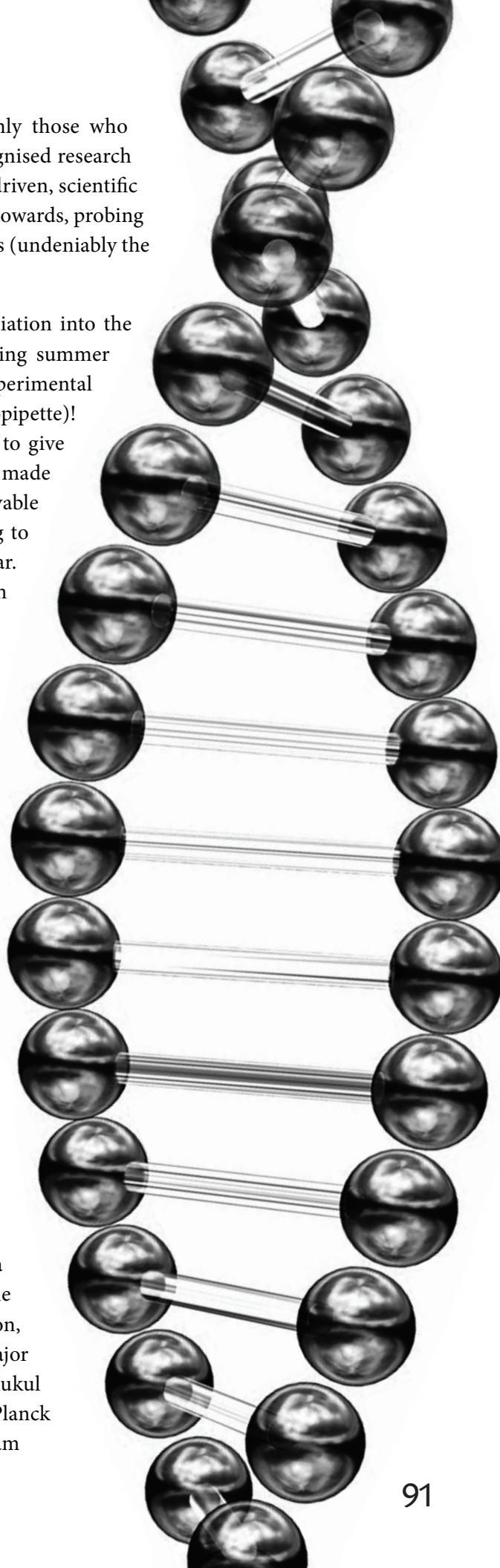
“Research is what I’m doing when I don’t know what I’m doing.” Wernher von Braun, the German rocket scientist, is supposed to have remarked during one of his more pensive moods. Whatever he might have meant, he certainly cannot deny that researchers are people who are very clear that what they want to be doing is, simply, research. Armed with unadulterated curiosity and unbridled enthusiasm, many UGs are exploring the fascinating ‘research’ world. Being undergraduates at an institution which figures prominently in the list of the country’s best research institutes, it is not surprising that many UG students are already involved in various ‘research’ projects of their own. From landing summer internships at illustrious places around the globe, to designing and executing highly original, and, if one may use the term, ‘publication-worthy’ research projects, the UGs seem to be bent on proving their mettle as serious researchers. More importantly, staying true to the hundred-year-old legacy of the institute of producing quality research work, many are increasingly becoming successful in the attempt.

Lest we get carried away, let me remind you of the fact that we still live in an age and place where there would, undoubtedly, be many people who would consider the very term ‘UG Research’ as an oxymoron. So what is different here? Maybe it is the highly flexible course structure, with a strong emphasis on hands-on learning or the encouraging, friendly and approachable professors and instructors who are ready to take in relatively inexperienced undergraduates into their lab. Maybe it is the compulsions of various fellowship and scholarship schemes; for

instance, the KVPY scholarship and fellowship is extended to only those who faithfully and without fail undertake a summer internship in a recognised research centre. However, I would like to blame it on the insatiable, curiosity driven, scientific ‘instinct’, that puerile enthusiasm, that unquenchable thirst for, and towards, probing the unknown, that motivates and drives this set of ‘young’ researchers (undeniably the youngest on the campus).

Himani Galagali, a Biology major, vividly remembers her own initiation into the laboratory: “I worked under Prof Usha Vijayraghavan, MCB, during summer 2011; I was fresh out of school and I didn’t know the basics of experimental molecular biology (I did not know how to choose and use a micropipette)! I am very grateful to all the students and research assistants there to give my experimental biology skills that initial kick start which has made me appreciate and love the subject so much.” It has been one enjoyable and eventful journey since then, and this summer, Himani is flying to University of Illinois at Urbana-Champaign, USA, as a Khorana scholar. She will be interning at Dr. Supriya Prashant’s lab, which works on a protein complex which apparently regulates the initiation of DNA replication in eukaryotic cells; probing the regulation of certain signals could give important clues regarding uncontrolled cell division and hence, cancer. If Himani realised early on that working in ‘wet’ labs was what she enjoyed the most, there are others who got to know that ‘dry’ lab techniques (i.e. computations/modelling) were their true calling. Sowmya Indrakumar, another Biology major, after dabbling in both ‘wet’ experimental and ‘dry’ computational research projects, realised that she “had developed a taste for the dry lab.” She is also sure that she wants to work in the same field in the future; her final year project is also a computational project in the field of structural biology. She is spending this summer in Germany, interning at Max Planck Institute of Developmental Biology, where she would be working on analysing existing hydrophobicity scales and programming a tool to identify residues in a given sequence that are significantly more hydrophobic than the family consensus. Her internship, along with the travel expenses, is being funded by ZAV (German International Employment Agency: “Zentrale Auslands-und Fachvermittlung der Bundesagentur für Arbeit”).

If you thought that these were the only people scouting the globe this summer, you would be grossly mistaken. There are at least a dozen undergraduates doing their summer projects abroad this time round. Statistics reveal that Germany is the most favourite destination, followed by the United States of America. Rajat Agarwal, a Physics major is headed to IIASS (Università degli Studi di Salerno), Italy, while Mukul Bhattacharya, another Physics major, would be interning at Max Planck Institute for Gravitational Physics, Germany. Meanwhile it’s Uncle Sam



calling for Abhinav Jain, a Materials major, who is interning at University of Buffalo (Amherst, New York). Jahnavi Kolhe, a DAAD scholar, is headed to Max Planck Institute of Immunology and Epigenetics. She would be working in Dr. Thomas Boehm's lab, where she would be identifying mutant genes in three mice lines which show defects in thymus development.

While there can be no doubts that interning abroad could be a huge learning experience, one exciting journey, giving enormous exposure, broadening one's world view and perspective, while at the same time being great fun, it is important to realise that it is not easy to get the necessary funding and support, and at the same time get a chance to work in one's own area of interest and expertise. However,

it is important to make use of the plethora of opportunities available today for young researchers willing to go the extra mile. DAAD fellowships seem to be a hit with the UGs already, and in the coming years, hopefully, the trend would show an upward surge. The process of applying is really quite simple, certify the recipients: all one needs to do is to apply to a professor/researcher at a recognised German University, for the position of a summer intern. It is also important to keep in mind the eligibility criteria that different fellowships insist on: for instance, DAAD fellowship requires that the applicants have a minimum percentile above eighty percent. For all the biologists/chemists out there, there is the esteemed Khorana fellowship. As for the non-recipients, there are other means and modes of getting funding: organisations like the ZAV are there to fill in the void. Furthermore, there are interesting student exchange programs which also provide additional opportunities to explore. For instance, there is the IISc-Brandeis University tie-up, 'India Science Scholars Program'. This year, Arijit Paul is all set to intern at Brandeis University, Massachusetts, USA. The thumb rule, on the whole, seems to be this: keep your eyes and ears open, even

as you ponder on that next big idea to work on; for all the opportunities galore, it is important to be aware of them.

There are also many others sweating it out on the home turf (read on campus). Feeding



off the vibrant research atmosphere that the campus boasts of, these are the UGs who are enthusiastically following their passion, taking up innovative research projects. Praveer, a Physics major, had interned earlier in Professor Raghurama Rao's lab, at the Department of Aerospace Engineering, IISc. He has developed a Kinetic Theory-based numerical scheme to solve Euler's and Navier Stokes' equations. It is named Grid INdependent Essentially Upwinding Scheme (GINEUS). Now, he is in the process of getting some of his findings published. So is George Yumnam, who is currently working in the Materials Research Centre, IISc, Prof. Abhishek K. Singh's Lab. "I am currently working on Computational Materials Science related to thermoelectrics and their electronic properties using solid state physics and the computational softwares: WIEN2K, VASP and other clusters available



at MRC and SERC”, he writes.

From writing to prospective research guides with the right amount of tact and insight, to learning the ways of the lab, from getting the nod from the guide (a feeling akin to that of being the ‘Chosen One’) to getting to live your very own ‘Eureka’ moment, internships and research projects often throw up some unexpected ‘light’ moments. These fond memories usually consist of mishaps in the lab that new trainees inevitably end up making. Jahnavi remembers the one time she forgot to switch off the pressure cooker after autoclaving a lot of pipette tips and oakridge tubes and ended up with a molten mass that they had

to hammer out with a screwdriver and which was then put on display in the lab! But the important thing, feels Bhavna Khandra, an intern at Prof. K. K. Nanda’s lab, MRC Department, IISc, is feeling at home in the lab. “My labmates are very considerate and helping... they say ‘this is YOUR lab, feel free.’”

So what do our esteemed (and extremely busy) professors who take up UG interns and researchers into their lab, feel about the UG research ‘spirit’? “First, it is a great opportunity for UG students to get exposed to research and the environment in a laboratory at an early stage in their careers. At the initial stages, it will be a bit difficult to understand and to get going, but the experience of belonging to a research environment ought to be thrilling!” says Professor Dipankar Nandi, Biochemistry Department, IISc. However, he feels that, “UG students ought to try to do something different than what is currently pursued in the laboratory. Perhaps, some interdisciplinary research or collaborative research may bring in a novel angle to the current interests being pursued in a laboratory.” Finally, he gives an important word of advice for the upcoming researchers: “students should enjoy research and understand that there will be lots of failures. However, the few successes should be relished and will enrich their overall academic experience in IISc.” So all the UG researchers out there, take a bow, and may your tribe increase in the years to come! ■



Foreign Opportunities

People on the lookout for foreign internships should keep in touch with websites like Internshala (Check it out at www.internshala.com) and EduInfo (www.eduinfo.asia) that list domestic as well as foreign internship opportunities for research in prestigious universities around the globe, from Europe to the United States. It would be a good idea to plan well ahead of time and keep oneself updated on the latest opportunities and developments.

Some prominent places to lookout for are:

1. Institute of Science and Technology Austria: ISTernship.
2. Summer Research Internship Programme at National Tsing Hua University, Taiwan.
3. Research in Industrial Projects for Students (RIPS) 2014 at University of California, Los Angeles.
4. Summer Undergraduate Research Fellowships (SURF), California Institute of Technology.
5. Summer Undergraduate Research Fellowships – LIGO, California Institute of Technology (LIGO-SURF).
6. The LPI Summer Intern Program in Planetary Science, NASA.
7. Summer@ICERM program, Brown University, United States of America.
8. Working Internships in Science and Engineering (WISE), Deutscher Akademischer Austauschdienst (DAAD), Germany.
9. The Inria “Internships” programme, France.
10. The S.N. Bose Scholars Program and the Khorana Scholars Program, funded by the Indo-US Science and Technology Forum (IUSSTF).
11. The Kupcinet-Getz program – Weizmann Institute of Science, Israel.
12. The CERN Summer Student Programme, Geneva, Switzerland.
13. Mitacs Globalink Research Internships, Canada.

In addition to the above-mentioned programmes, IISc has several MOUs (Memorandum of Understanding) with notable partner universities abroad, the complete list of which is available at www.irc.iisc.ernet.in/agreements.html. Students may also apply for internships to individual Professors at these universities, as per their interest, in the absence of a formal internship programme.

Quarks now presents a few brief statements from foreign institutions that have expressed interest in extending support to the students of IISc in their pursuit of higher education.



Science beckons at The University of Tokyo

Through a wide range of degree courses, transfer programs and novel research facilities, The University of Tokyo's (UTokyo) undergraduate and Graduate School of Science offers international students and researchers exciting opportunities to be a part of UTokyo's pioneer-

ing research and innovation in science. With 3 Nobel Laureates in Physics and a Fields Medal winner amongst its eminent alumni, and sustained top worldwide rankings, the Graduate School of Science (GSS) is committed to cultivating top notch scientists and leading the world in research.

Transfer program in Chemistry for undergraduates: Global Science Course

Second-year undergraduate students of chemistry now have a great opportunity to transfer into UTokyo's Department of Chemistry, ranked world number 6. Studying under world-renowned faculty and alongside Japan's brightest students, transfer students complete their 3rd and 4th year at UTokyo, graduating with a Bachelors degree in science in chemistry from UTokyo. Classes and course work are entirely in English. All transfer students receive a generous scholarship of Japanese Yen 150,000 per month. Accommodation is provided in a dormitory at no cost. The intake for this program is twice a year in October and April.

The Global Science Course looks forward to applications from IISc students.

For more information please visit:
<http://www.s.u-tokyo.ac.jp/GSC/>

Founded in 1877, The University of Tokyo (UTokyo) is Japan's oldest and most prestigious national university. The School of Science was also established at the time of the university's founding and is the oldest research facility in Japan.

QS World Rankings by Subject 2013

Chemistry	6
Physics	9
Biological Sciences	12
Civil Engineering	3
Chemical Engineering	8
Mechanical, Aeronautical	8
Electrical Engineering	12
Politics, International Studies	9





The University of Tokyo Summer Research Internship Program (UTRIP) is an intensive five week research program for undergraduates who have a keen interest in pursuing an M.S. or PhD. degree in the natural sciences. This program provides students an invaluable opportunity to work with world-renowned faculty on hands-on research projects at the cutting edge of natural science.

UTRIP is the gateway to pursuing an advanced degree in the sciences at UTokyo. Students who do

well in this program will be given preference for the prestigious Graduate school of Science scholarship when applying for Masters or PhD courses at UTokyo. This is an invaluable opportunity to get a head start in challenging the rigors of graduate study in the natural sciences.

All students receive scholarships.

There are no tuition fees.

For more information please visit:
<https://www.s.u-tokyo.ac.jp/en/utrip/welcome/>

Master, PhD and Research opportunities at the Graduate School of Science

The Graduate School of Science comprises of six departments: Physics, Astronomy, Earth and Planetary Science, Chemistry, Biophysics and Biochemistry, and Biological Sciences. Masters and PhD degrees as well

as non-degree research opportunities are available to international students. Information on how to apply is available on the website: <https://www.s.u-tokyo.ac.jp/en/admission/howtoapply.html>

For more information on the scholarships
and admissions process please visit:
<https://www.s.u-tokyo.ac.jp/en/admission/>

The University of Tokyo India Office in Bangalore
indiaoffice@ml.adm.u-tokyo.ac.jp

Phone: 080 4150 8509

Address: #408, Prestige Meridian I, 29 M.G. Road, Bangalore
560001

Website: <http://www.indiaoffice.dir.u-tokyo.ac.jp/>





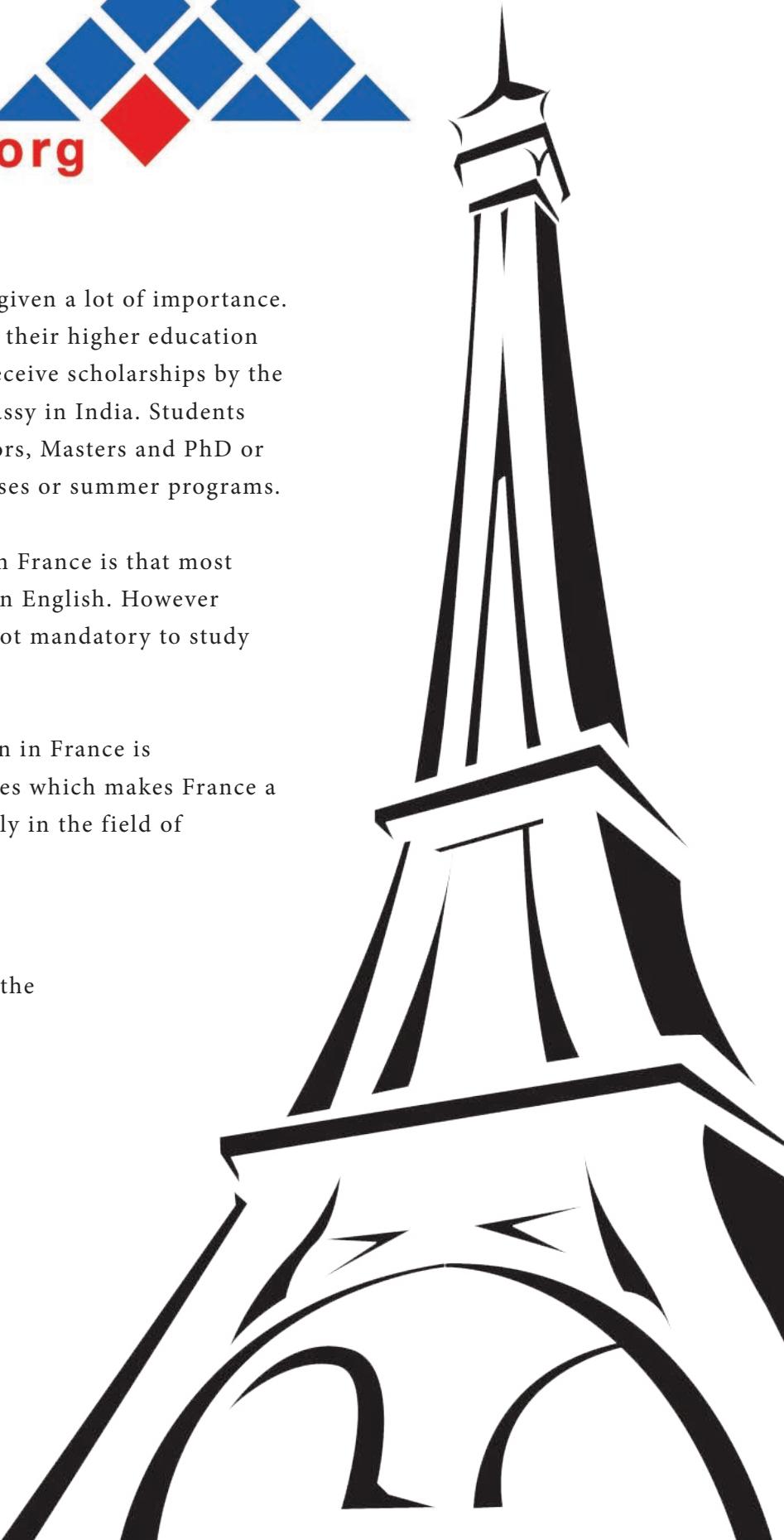
France is a country where education is given a lot of importance. More than 3000 Indian students pursue their higher education in France every year and around 10% receive scholarships by the French government or the French Embassy in India. Students can do long term programs like Bachelors, Masters and PhD or choose from a range of short term courses or summer programs.

One of the best things about studying in France is that most of the programs are completely taught in English. However knowledge of French is beneficial but not mandatory to study in France.

In addition to this, the cost of education in France is comparatively lesser than other countries which makes France a sought-after study destination, especially in the field of management, engineering and science.

For more information, please log on to the official Campus France website
www.india-campusfrance.org

Or contact Ms. Madhuri Welling at
bangalore@india-campusfrance.org





Switzerland.

India.

SWISSnex

Studying in Switzerland

Switzerland is a hub for excellent education and science. It has outstanding universities (two federal institutes are in top 20 in the world rankings) with numerous programs, many world-class public research institutions. The quality of life is among the best in the world. Excellent infrastructure, safety, and political and economic stability are all good reasons why Switzerland is a great place to study and conduct research.

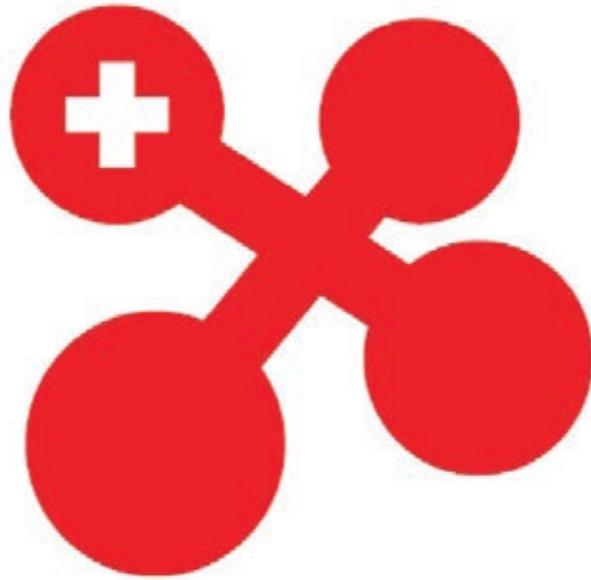
Master's Programme

Students seeking admission to a Master's programme must hold a Bachelor's degree. Master's programmes deepen first-degree knowledge and enable students either to specialise in a particular field or to acquire interdisciplinary training. Master's programmes usually last three to four semesters and are awarded 90 to 120 ECTS credits.

The Doctorate or PhD Programme

Candidates seeking admission to doctoral studies must hold a Master's degree from a doctoral/research university. Candidates with a 4-year or 5-year Bachelor's degree may also apply, but they should explain the specifics of their education in the Statement of Objectives letter. The acceptance is decided on a case-by-case basis, by the committee of the doctoral program of the University for which the candidate applies. Doctoral degrees are awarded by the following Swiss Universities:

- Swiss Federal Institute of Technology Lausanne (EPFL)
- Swiss Federal Institute of Technology Zurich (ETHZ)
- University of Basel
- University of Berne
- University of Fribourg
- University of Geneva
- University of Lausanne
- University of Lucerne
- Università della Svizzera Italiana (USI), Lugano
- University of Neuchâtel
- University of St. Gallen (HSG)
- University of Zurich



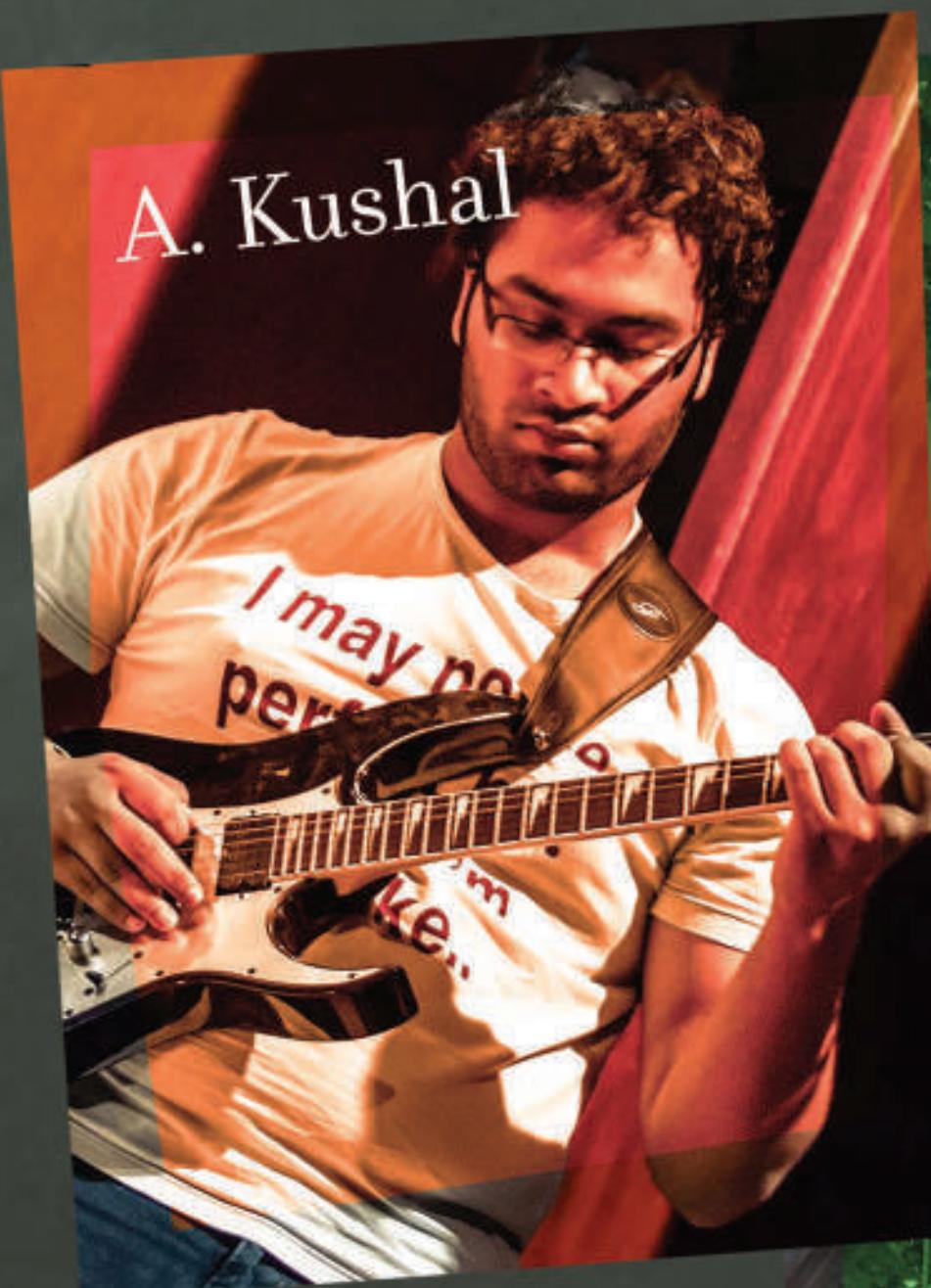
Swiss Government scholarship for Indian students

Scholarships for doctorates and post-doctorates at Swiss universities and Federal Institutes of Technology are awarded by the Swiss Government, through the Federal Commission for Scholarships for Foreign Students (FCS). Before applying, candidates should get in touch with a professor or with the responsible service of the programme at the chosen Swiss higher Education institution in order to get a written confirmation of acceptance. Call for applications open in September every year. For details, please check: <http://goo.gl/KYz1GH>

For more information on Swiss higher education courses, please write to: info@swissnexindia.org



Art by
JANHAVI KOLHE



A. Kushal

Avishek



The Pink Pen and the Broken Piano



? MIMAMSA '14

Be In-quiz-itive

"Well, to begin with, welcome back! Yes, we were there and we won it again." Nothing simpler to start with, especially perhaps, after an experience so joyful that words would overshadow their own depths. Guessing what we are talking about? Well, it's Mimamsa, the science 'quiz' conducted by IISER Pune (we don't know why they call it so, but for their sake, let's assume it to be true). There is not much to describe about Mimamsa, which has perhaps become the best of its kind in India, and for the overcurious lot, Google would not be offensive to your senses.

Came November, and after the last two years, with our batch, 'the Mimamsa thing' was in the air. A class of over hundred segregated in tetrads. Amidst the well-known nonchalance that shrouds undergraduate life at IISc, speculations were on regarding who all chose to join 'second-year teams'. However, team formation was, in all, pretty random, at least for us. Anshuman and Anurag thought of taking the quiz together, at midnight, and woke the other two, Avishek and Kushal, from sleep with irritating suggestions like "Let's name our team *****" and "Let's design our team T-shirt!" Exasperated, from that night onwards,

we stopped discussing Mimamsa altogether, only to appear in the prelims two months later, without ever thinking of anything named preparation.

After the prelims, we had no idea of how we had done. Chemistry and physics were average, Kushal started nagging about the maths paper, while Anurag turned remarkably quiet. When asked, he told that he thought the paper went 'okay', having cracked ten of the twelve questions (yes, you heard it right).

Thanks to the previous two years' articles, you have already been told multiple times that it is more difficult to top among the IISc teams than topping the Finals. All of us knew that, and none of us really worried about who would make it to Pune.

Only Avishek had remembered the date for the announcement of results and getting up at five in the morning, had checked the website.

Thereafter, the other three woke up, finding it impossible to ignore the loud banging on their door and the subsequent excited shrieks, "Wake up! We won!"





After the initial round of congratulating each other, and of course, receiving wishes from others, was over, we settled down a bit and started thinking about the finals. Everyone around us seemed to think that the next round would be a cakewalk. When we look back now, we thank ourselves that we were, then, not convinced by the almost universal belief that the difficult part was over. Well, well, well ... coming to it.

In the finals, we were to make a presentation on some interesting science topic. We started taking notes (yes!) and roamed around with pen and paper and asked anyone around us what their favourite topic (in science) was. As the list grew, so did our confusion. All sorts of suggestions came, ranging from stochastic studies of cell locomotion to biodegradable polymers. Mokashi Sir (our Physics Lab instructor) first came up with the idea of artificial photosynthesis (thank you, Sir!) and we instantly liked it. A few days of researching revealed so many wonderful things that could be said about it. We mailed the organisers at IISER Pune and they accepted the topic, only after asking whether our presentation would be biology-based or chemistry-based. We went with chemistry.

Only then did the hard work start. Believe us when we say it was back-breaking (at least, back-aching), and the rough number of slides soon crossed fifty, as we went through the umpteenth research paper and tried to decipher the language. Kushal, for making sense of the equations, started mailing Prof. K. L. Sebastian (thank you too, Sir) while Anurag resorted to biology textbooks that had several thousand pages. Avishek and Anshuman went rigorously through the research papers (imagine the hardships) that were available on the topic, for textbooks were more boring.

Meanwhile, Anurag had started reading up Physiology for the quiz. The others didn't oblige.

A week before departure, we were ready with our sixty-slides-long presentation. We decided to give a mock presentation to some of our professors and classmates. It was a big flop, as we had expected. While the allotted time would be half an hour, we took fifty-five minutes. We thank all who had painstakingly listened to our extremely monotonous babble that day, and had pointed out specific defects.

Again we started taking notes, this time, of our mistakes. Our team started working as hard as never before, sacrificing the night's sleep for days altogether.

After learning that we had to write our mid-semester exams just after coming back from Pune, with nervous smiles on our faces and butterflies in our stomachs, immensely pressurized for the hat-trick, we bade goodbye to IISc for the weekend, only after hearing our friends Arpan, Tushar and Balaji threaten to kick us out of the hostel if we didn't come back with the trophy!

However, as the wheels of the train started rolling, the nervousness left us and we were soon in the mood of a weekend trip. Our spirits were not dampened when we came to know that the train had no pantry car, when Anurag's cookies got finished and when we had to wait till about afternoon only to have our lunch of idli-vada. Kushal called his Mom up and started describing the situation: "Hum chaar aadmi hain ... chaar ALAG ALAG aadmi hain! Aur khana nahi hain!" We did manage to 'procure' some good food for dinner.

The next morning, two students from the IISER received us at the Pune Junction. After an hour's drive through the city, when we were being allotted rooms in IISER, we were already amazed at their hospitality. They gave, to each one of us, the institute LAN ID and password. The mess food was quite good. Add to it the rough scenic beauty of the IISER and the cool breeze, and we felt awesome!

After sleeping through the whole afternoon, in the evening, we worked over our slides. In the meantime, we had been informed by the IISER people that the Mimamsa team would give us a demonstration of the quiz at 9:30 at night.

We got to know the St. Xavier's (Kolkata) team over dinner. They were short of one member ("The Physics guy!", they said). As they were there in last year's quiz, despite the handicap, they



would be a formidable opponent, we thought. Their team already knew half of the Mimamsa organisers, and was very enthusiastic at demonstrating just how much Pritish, member of last year's IISc team, talked!

After dinner, we were shown how the quiz would be conducted and what the rounds would be. We were shown all the IISER UG buildings. Finally, they allotted, to each team, one big lecture hall where we were supposed to practice our presentation. Our presentation being scheduled for the day after next, we left the spot almost immediately, only to rush to the music room. Anurag became overjoyed to discover an old detuned piano, and it was not before an hour that we left.

Next morning, the butterflies returned to our stomachs and adrenaline surged in the veins. Anurag was very insistent on not taking a bath owing to the only mildly hot water. The heating system was driven by solar power, and the sun was not overhead yet and

we were the people advocating Artificial Photosynthesis!

The Mimamsa team members were waiting downstairs for us. We, along with the three other teams, were escorted to

“Our friends threatened to kick us out of the hostel if we didn't come back with the trophy!”



the Hall where the quiz would be conducted. The judges had already taken their seats. Pen and writing materials were supplied. Kushal flatly refused to use the pink pen that he was given. And yes, the pink pen is quite important.

The quiz started sharp at nine. The first round was Biology and the questions were really tough. There was one brilliant question in which, given some observations regarding nitrogen fixation in some leguminous plants, we had to come up with an explanation of its dependence on malate metabolism. It was evident how much effort had gone into framing these questions. We heard that this time the questions had been made solely by students, with zero help from professors.

At the end of the Biology round, we were just a hair's breadth ahead of Xavier's. They did a decent job out of their exposition on Mitochondrial Diseases too. We had scored more from other teams' questions than our own direct ones. We were not too happy with our points.

After the sumptuous lunch was the Physics round. It started with

“An elderly guy from the audience visited the ‘*Bade Aadmi*’ to see how he had done it so quickly.”

IITB’s presentation on Laser Cooling. It didn’t go well. The team avoided many questions from the judges; to some they gave absolutely wrong answers. During the quiz part, we fared decently. IITB topped the round.

Next was the buzzer round, wherein we again failed to satisfy ourselves. After two of our answers cost us penalty marks, we lost our confidence and didn’t dare to answer the rest, while IITB took most of the questions. Just the last question was a bang for our team, when Kushal, with his pink pen, showed his quick math prowess, slashing the question in 5 seconds, when other teams were just clueless! An elderly guy from the audience visited the ‘*Bade Aadmi*’ to see how he had done it so quickly.

However, very surprisingly, at the end of the day, we had, though by a narrow margin, still retained the top position that we had taken in the Biology round. The reason might be that we had fared averagely in all the rounds, while the other teams had performed brilliantly in some rounds and very poorly in the others.

The quiz was over for then. The next day would be the Maths, Chemistry and Rapid Fire rounds, along with expositions from us, and CBS Mumbai. We were still hopeful that we would be able to finish the quiz retaining the lead.

After the very intense and stressful day, the gala dinner at a restaurant with the other teams and the Mimamsa team members was such a relief. Spirits ran high and all our blabberings grew more nonsensical thanks to the great food. Anurag gazed at us longingly from the other, rather silent part of our table—for the ease of serving, the vegetarians had been seated separately from others—as Anshuman went over and over again with comical mimicries of all our friends and profes-

sors, and a CBS member demanded the exact meaning of the Bengali slangs she had picked up from an IIT Kharagpur student, or rather, as Anshuman and Kushal were trying to entertain others with their sheer capacity to eat!

Stomach full, and limbs aching, Avishek was craving for bed. But no, Anshuman thought it blunderous not to practice our presentation at least once and Kushal half-supported. Unable to reason a way out, having the mock-demonstration-fiasco fresh in our minds, Avishek and Anurag wore the most reluctant expressions as we dragged ourselves to the Lecture Hall Complex. However, Avishek simply refused to go through his part again. A few of Kushal's and Anurag's slides were fiddled with and then, off we went to bed.

Trouble popped up the next morning, which was the final day of the quiz. Just when we had taken our seats in the Quiz Hall and the Maths round was about to start, Anurag complained of an upset stomach and said that he needed to visit the hostel immediately. Even Kushal was not feeling well.

We started the quiz without Anurag and we couldn't do much. Apart from the fact that we answered two questions perfectly, IITB was simply too good at Maths. Add to it that there were questions on topics that we first years didn't know enough about (like Linear Algebra), and that the day's sequence was IITB – Xavier's – IISc – CBS, so that in the rare case that IITB passed, Xavier's answered, and we didn't stand a chance. Quite to our expectation, we got the lowest in that round, along with CBS. Even though we were still leading (unbelievable, isn't it?), IITB was just ten points behind us.

Next up was our presentation on 'Artificial Photosynthesis'. As soon as we started talking, the initial nervousness was replaced by a firm sense of confidence. We had put great efforts into this, and we were determined to show it. Luck was with us too. After all four of us finished going through our portions and Anshuman had concluded, we couldn't believe our eyes—the timer said we had taken twenty-nine min-

utes and fiftyeight seconds, just two seconds less than the half-an-hour deadline!

After the presentation were the questions from the other teams and from the judges. We might say, we did quite well in that too. The questions from other teams were easy, but not those from the judges. There

were some very fundamental questions regarding energy storage within chemical bonds, the chemical logic and the kinetics of the photosynthetic procedure. However, we were pleasantly surprised to find that, at the end of ten tough

minutes, we had satisfactorily answered most of the questions.

We heaved a great sigh of relief as we went down to lunch. The toughest part was over, and we had given a very good presentation. Combined with it was the fact that we were still leading, and we started to see a ray of hope.

After lunch, CBS Mumbai was to give their exposition on Molecular Gastronomy. It concerned the chemical processes through which food is processed in order to make it visually appealing. It was average, with the CBS team dodging some of the judges' questions. Therefore, before the last round, we were pretty confident that our presentation had been the best.

The chemistry round started, and again we lagged behind Xavier's in answering the questions. Though we thought that we knew most of the answers, Xavier's always got the chance before us, and they utilized it well. The team order that had reaped us so much benefit the previous day, was, unfortunately, telling upon our scores today. Sure enough, at the end, Xavier's had topped the round, with us coming second to them.

“Combined with it was the fact that we were still leading, and we started to see a ray of hope.”

“Xavier's always got the chance before us, and they utilized it well.”

It was the time for the announcement of results, and everyone could guess it was either Xavier's or us. Fifteen minutes of thank-you speeches, fifteen minutes of building up the tension, and then, finally, it was announced. Yes, we had won and that too, by a huge margin! And that too by a huge margin! Our performance at the presentation had been the most crucial element. Greetings were flooding in through calls and text messages. We were handed over the golden rolling trophy, along with our huge team trophy and the individual trophies. The joy of the stress being all over, flavoured with the ecstasy of having achieved the hat-trick, made us feel at the top of the world. Later that evening, Anurag broke a key of the old detuned piano in the Music room, of course, without reporting it to the IISER authorities. Anshuman went crazy and struck up an elaborate conversation describing UG life at IISc, not to go to bed before three in the morning. The Xaverians concluded that Anshuman talked as much as, if not more than, well, Pritish.

Next morning, it was time to bid goodbye to IISER Pune. Our train was scheduled to leave at eleven. Before leaving, we met Dr. Sutirth Dey. Mimamsa had been his own brainchild. We thanked the Mimamsa team for the wonderful experience. The tremendous effort they had put into materializing an event at such a large scale was evident from the pleasure and satisfaction with which their faces were glowing at the moment.

So we came back to IISc, came back with the hat-trick, back to the schedule of classes and exams and labs. We had done it, in spite of the immense pressure that was on us. Ever since the beginning of the UG programme, IISc has been winning the trophy; still, we should say, there are no expectations from the next batch. The mind-boggling questions, the desperate struggle to find explanations, the ups and the downs throughout the two days, will be enough to make Pune a place worth remembering.

P.S. Contrary to the rather general expectation, they didn't give us the rolling trophy permanently. The pink pen was never taken; the broken piano key, never discovered. ■

Anshuman Swain &
Avishek Das



THE GAMES
WE PLAY



A composite image. On the left, a soccer player from behind, wearing a dark blue and red jersey with 'MESSI' and the number '10' in yellow, and a small Unicef logo. On the right, a close-up of a character from the video game League of Legends, specifically the character Teemo, shown from the waist up, wearing his signature blue hooded cloak.

The undergraduate community in IISc has its virtues. Some of us might add that it has its vices as well, as our long-suffering instructors and administrative staff will readily testify to. These include sleeping during lectures, not submitting lab records or the not-so-innocuous rowdiness and general anarchy that can be observed in the hostels.

Prominent among these undesirable activities is the surprisingly heady and addictive one of gaming. Almost all of the undergraduates indulge in playing videogames frequently and regularly, some more so than others. A more distinctive niche is that of collective games, participants of which play almost daily against other opponents, with much shouting, name-calling, emotion and high drama and gnashing of teeth (and the occasional breaking of furniture) involved. So let's take a look at some of the some of the more popular games that collective gamers play.

— Aditya Hebbar, Rohit Chatterjee and Sriram C.

DEFENSE OF

DotA, which stands for “Defense of the Ancients”, is a custom map for the 2003 game “Warcraft” in which 5 players on two sides are pitted against each other in a battle to destroy a particular building on the other side (called the “Ancient”), the first to do so winning the match.

At the start of a game, each player chooses one “hero” from a pool of 112 (as of the latest version of DotA, which is 6.80c). There are three “lanes” (paths) that lead from one side to the other side, each of which has 3 “towers” which protect your side from aggressors. Preventing the destruction of these towers is an essential part of the game, as the Ancient cannot be destroyed without all towers being destroyed in at least one lane. Every 30 seconds, uncontrollable units called creeps spawn at each of the 3 lanes and travel down these lanes, clashing with enemy creeps on their quest to destroy the enemy towers. The 3 lanes are characterised by where these creeps meet. One lane has the creeps meeting close to your outermost tower; this lane is called the easy lane. One lane has the creeps meeting right in between your and the enemy’s outermost towers—called the mid lane and the last lane has the creeps meeting close to their outermost tower, called the hard lane. Killing enemy

creeps gives gold and experience and this is the primary means of accumulating the same, the former is required to buy items while the latter allows you to level up your hero, and both of these dramatically increase the power of your hero.

Given that there are 3 lanes and 5 heroes, there are multiple ways to divide these heroes into these lanes—the most popular being 2-1-2, which means 2 heroes each on the easy and hard lanes and one hero on the mid lane. The heroes are placed in the lanes according to their roles—carry, ganker or support. Carries are heroes which are weak in the early game but become very strong with levels and items (note that they are called carries for their ability to almost single-handedly “carry” the team to victory as the game goes in the later stages if given enough gold and levels). Gankers are heroes that move around the map and try to create space for your team to get gold/level up by “ganking” (slang for ganging up) on enemy heroes and killing them. Supports are heroes who are good for the early game but are not too strong later in the game; their role is to “support” the carry by saving him/her from enemy gankers. Of course these descriptions are just a broad



THE ANCIENTS



means of classification, and in the hands of an experienced player, any hero can be played in any role.

What make DotA so fascinating are the combinations—picking 5 heroes out of a roster of 112 heroes who can be further customised by picking items from an armoury with 129 items, the strategic mind games—choosing your own team's strategy, guessing the other team's strategy, ensuring your team can deal with the enemy strategy and so on, and of course the execution—playing the game on the battlefield, tweaking your game plan on the go to deal with any surprises, etc. An often criticised aspect of DotA is its steep learning curve—most other games are easy to pick up but hard to master, but DotA is hard to pick up and harder to master (!); however the writer feels that the challenging aspect of the game only adds to its allure.

It was DotA that popularised the then nascent MOBA genre (Multi-player Online Battle Arena) which is in fact just a moniker for all games whose premise is similar to the original DotA.

In 2009, Valve (the company that gave the world Counter Strike and Half Life) bought out the rights for DotA and hired the amateur developer of the DotA map—Icefrog—to

be the lead developer on their new game “DotA 2”, which would be a standalone version of the DotA map with modern graphics and higher functionality compared to the original, which makes use of the 2003 Warcraft engine. DotA 2, which was fully released in 2013 after one and a half years of beta testing, is now one of the most popular multiplayer games online with over 8 million players per month. DotA 2 is free to play, however players can pay in order to buy cosmetic items that customise the looks of the heroes (these items do not affect the gameplay at all) or to buy tickets to watch professional games that take place around the world. This has created a whole ecosystem where players trade items with other players and bet items on the results of professional games. To popularise the game, Valve holds an annual tournament called “The International” which involves all of the best professional teams from around the world. The 4th edition of The International, which is scheduled for July 18th to July 21st, started off with a prize pool of \$1.6 million but with Valve allowing players around the world to contribute directly to the prize pool, the prize pool now stands at \$8.5 million, making it the biggest E-sports tournament in history.



FIFA is a football simulation video game produced and marketed by EA Sports. Rather, it is a series of video games with multiple serial editions, with a new edition brought out each successive year, with special editions sometimes brought out just before FIFA World Cups. FIFA allows one to play a virtual game of football with a team of one's choice, with various actions available to the player, who represents and acts as the player on the ball. The player may choose to move with the ball, take on opponents in dribbles, take shots on the opponent's goal and make a selection of passes to his teammates. Players not on the ball are controlled by the AI; however the game offers rudimentary controls on off-the-ball movement. The game is played mainly using a keyboard or a controller.

Much of FIFA's appeal is derived from its barefaced imitation of the beautiful game. Many of us are football fans, but not as many play the game regularly or are able to play the way we would like to. Additionally, there is an absolute boyish charm to being able to play simulated versions of footballing idols and repeat what those players pull off consistently on the field. This ability to dictate a whole game of football and players' actions on some level gives players the rush fans often feel to see their favourite teams on the TV.

Of course, if this were the limits of what one of the bestselling games of all time had to offer, it would hardly be valued more than a valuable footballing trinket or memorabilia. Fortunately for the legions of FIFA players all over the world, picking up the game is easy and once familiar, playing the game and handling players instinctively is a breeze and playing with your mates has a joy of its own. Being a dynamic game, football, and hence FIFA involves a continual rush of excitement, with no let offs. It makes a must the abilities to think on your feet and spot opportunities, and change the game accordingly.

Adding immensely to the fun is the inherent strategic complexity of the beautiful game. Football in itself requires continual tactical tinkering to change the game—whether to push players forward for that last goal, whether to put on that extra defensive midfielder to hold on to the lead, whether to route long balls to your target man and play off him, or use

FIFA

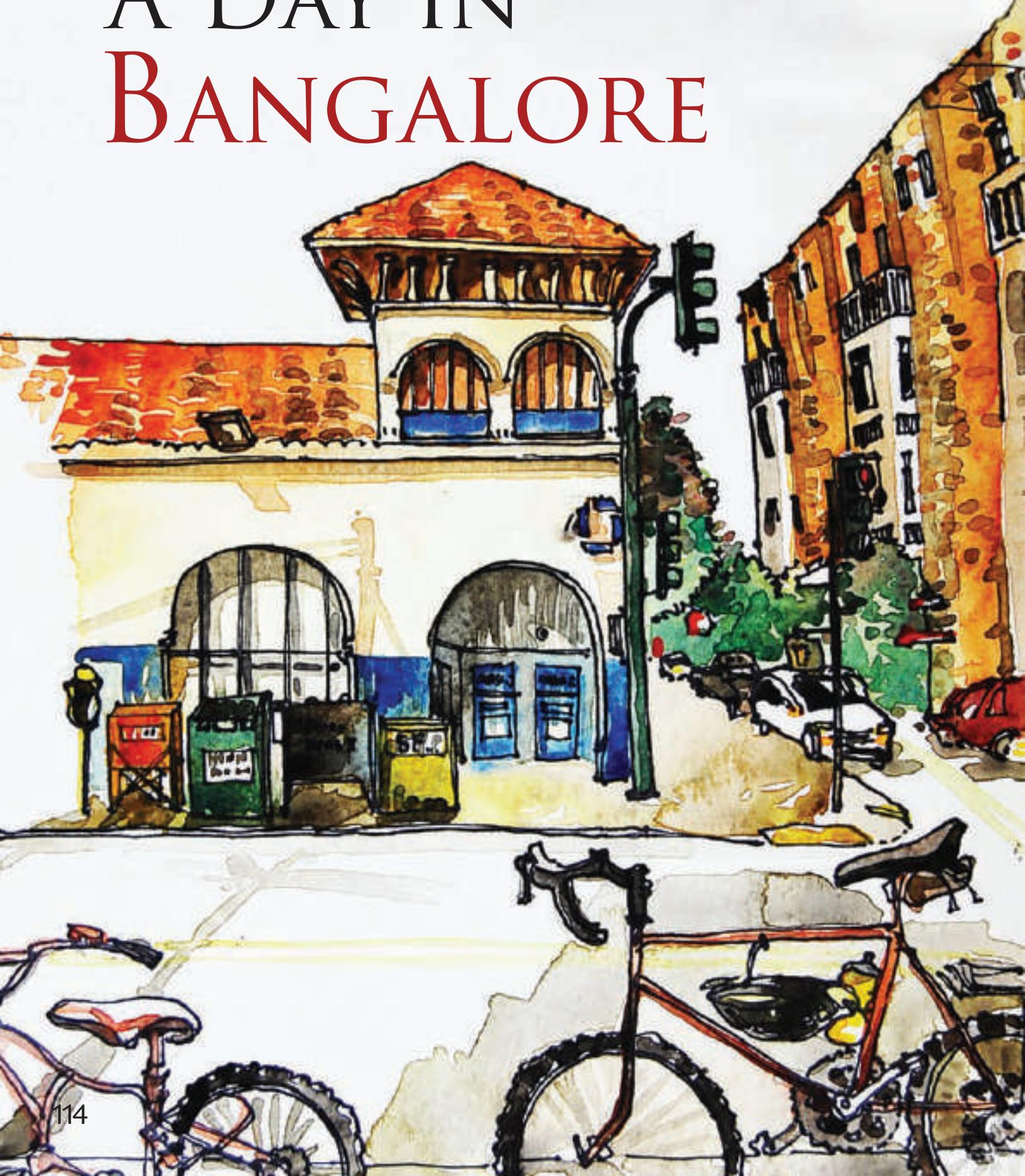


fast, intricate passing to prompt attacks, whether to hound opposition hard in the midfield, or sit deep and soak up pressure—all are choices one has to make at various points of the game, and often recurrently. All these make games with players facing fascinating and illuminating tactical encounters. The game mechanic in recent editions is advanced enough to handle a variety of nuances involved in real play, and easily allows one to plan forward four or five moves at a time, and pull these plans off perfectly.

As such, the game is simple enough to learn, but is humbling when played against human opponents. The reason is that FIFA is a dynamic game where tactical advantages can be exploited multiple times and can also accumulate. Thus if one is not able to spot mistakes and correct them, the same moves can leave the player looking on haplessly over and over again, and often lead to embarrassing scorelines. Thus, FIFA is akin to DotA in that the game hardness increases significantly and disturbingly when played against human opponents. Fortunately, the AI provides a pretty good challenge to learn the ropes and set oneself up.

From a purely tactical point of view, FIFA is pretty complex as it offers players a lot of options in terms of variety of attributes of different players, choice of formation and customisable tactics, letting one change attributes like passing speed, length and amount of risk, intensity of the midfield press, frequency of crosses and runs into the box, and the like. These changes are not cosmetic but significantly affect the gameplay, thus allowing players to hack and chop to get at a perfect combination, and there are styles suitable to everyone—there are literally as many playable combinations as there are potential players, and such strategic flexibility is unique among video games. Add in the dynamic nature of the game and the strategic use of substitutes and tactics and formation changes on the fly, and you're looking at a whole new kind of gaming challenge. Apart from casual confrontations on a single computer or console, EA has an online hub for recent versions of the game which is vastly popular with players playing over the world. In fact, it is arguably the most popular competitive video game after first-person shooters. And, for a football fan, there's nothing better. ■

A DAY IN BANGALORE



It was your usual summer afternoon, hot and humid, though not too humid. The worst possible time of the day in the entire year to go for a ride on the road, especially on a bicycle. Yet I was out there, wondering why the hell I was doing that very thing. Every single fibre of my being protested against it, my skin was burning and sweaty, my nose runny from all the pollution. And yet I was there, hoping to get to Mantri before I collapsed and died of exhaustion on the road. It didn't help that someone, a long time ago, most probably confounded by the problem of managing traffic on the narrow roads of Malleshwaram came upon a brilliant solution while daydreaming. I guess his thoughts might have gone like this—"Do you know what would be an amazing way to magically solve all the traffic problems in Malleshwaram? Let's make all the roads one-way." I, (being the law abiding citizen that I am) however, was adamant on not breaking the traffic rules, while my mind kept whispering "It's ok, it's just one wrong turn, don't worry, nobody's looking." It's not that it's a bad solution, but please, on a hot summer afternoon when you want to get from A to B, (where B preferably has air-conditioning), you don't want to keep taking detours every few blocks.

I shouldn't be complaining too much though. In terms of weather, Bangalore is definitely the best city I've ever lived in. My previous statement might sound very important until I tell you that the other two cities I have lived in were ... number one—Dubai, which happens to be smack in the middle of a desert, with burning hot summers (50 degrees C at a maximum) and rather cold winters (around 12 degrees C) and number two—Kochi, a wonderful city in the tropical rainforests of Kerala where, in my opinion, you tend to be drenched all round the year—humidity at its best. Saying that I've had my fair share of bad weather would be a gross understatement. Bad weather and I, we have this mutual understanding, you know, a connection on a deeper level. Although I have just lost all my credibility by revealing to you my very low standards for good weather, I think Bangalore definitely turned things around for me. What can I say; the weather is just as amazing as all the rumours have made it out to be. Bangalore seems to be in this little Goldilocks zone of weather, by virtue of its location atop the Deccan plateau, I suppose. It never rains for too long and even if the sun is out, the regular breezes cool you down. It's even better inside IISc where you don't have the nauseating and suffocating pollution of Bangalore's roads clawing away at your throat.

After what seemed like hours to me, I finally arrived at the air-conditioned refuge of Mantri Square Mall—a fortress built to protect the denizens of Bangalore from the world outside while they (window) shop and eat (cheap fast-food) and walk (until they find the next bench to sit on) and do whatever else that people usually do at malls. Of course it's necessary, I mean, how else will you placate the stressed-out, workaholic software engineers that make up a large chunk of the city's population (no offence intended to anyone, especially people who are not in the IT industry. You are important too...)? You give them places to spend their hard-earned money on ridiculously expensive food, designer clothes and other daily stuff.

While I basked in the cool air, satisfied, I realized that I was really hungry so I headed to the food court, which happens to be so conveniently placed on the top floor. However, the problem begins once you get there. I'm sure most of you have experienced what I like to call "Food Court syndrome", that feeling of acute overwhelming indecision that slams you like a wave of ice-cold water as you first sight the food court and doesn't leave you until you are so full that you can't think about food anymore. They just have so many options! Would you like some traditional Indian, Italian, or Chinese or just ice cream or maybe even some fried chicken (mafia alert)? From fast-food to restaurants to other stuff, it has "everything you deserve but not what you need right now". However, when you take a closer look, Bangalore has had a long tradition of fast-food, even before all the popular brands started appearing. Right here in Malleshwaram, you have the really old classic fast food places (which still happen to be very popular) like Vee-na Stores (I'd definitely recommend the Puliogare and Vada), CTR (Chennai Tiffin Rooms—best Benne Masala Dose ever) and Adiga's interspersed with McDonald's and Pizza Hut.

After a few minutes of indecision, I gave up and decided to head over to Taco Bell and eat a Crunchwrap. I will fast-forward here to keep your attention. First, we have a few minutes of eating while standing since Taco Bell was under renovation. Then, around an hour of roaming around aimlessly and buying random stuff. It was then that I realized that I had to cycle all the way back to IISc—on a full stomach. And I did. I got back to my room and fell on the bed, my exercise-deprived legs groaning from the torture I'd put them through for the last two hours. The End. ■

Hans George Kaliaden



The Bicycle Baba

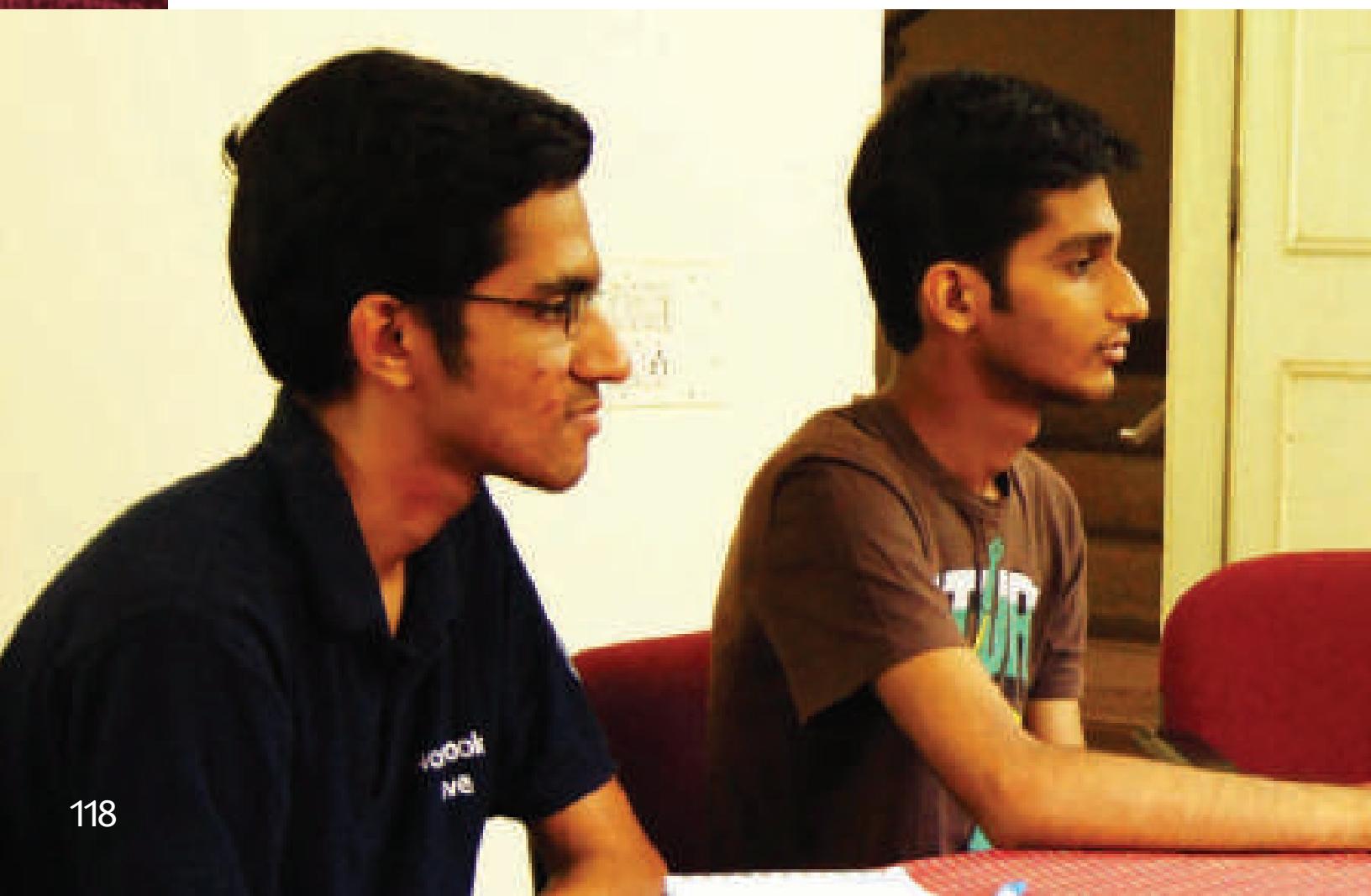


On either side of the handlebars of the red Hercules Rebellio 619 before us, we see toy tridents welded into the plastic. In the middle is a tiny red fan that is powered by the passing breeze when you ride the bicycle. Further down, a ruby-red air horn barrel (from a lorry) is fixed to its frame. The horns, rarely used, can knock sense out of the sanest drivers on our roads. One cannot miss the multitude of stickers that decorate the vehicle on its mudguards, the steel frame and the navy-blue tool box at the rear: Ferrari logos, snakes, butterflies, starfish and yellow smileys surrounding a pantheon of deities across religions.

This is the bicycle of Mr. Satish who is an executive at the Alumni Association in the Institute. His is a familiar sight to institute folks—of his riding on the roads in gaudy costumes, leaving his hands free if not pos-

ing as the mighty Lord Hanuman, and with a tranquility on his face only the presiding deities of our temples can match. Yet we knew little about the man and his mission, which is to ‘disperse positiveness’, and hence the Quarks Team decided to meet Mr. Satish at his office for an interview.

Mr. Satish is a fan of cycling and promotes it as it is healthy and lessens the strain on the environment. He himself commutes between his home at Ulsoor and the Institute everyday, which is a twelve kilometre stretch. Incidentally, he found an image to his one-manned campaign within the Institute by observing Deepak Malani, a former student who had a knack of riding fast and handsfree. It was tough initially to do so but Satish kept practising until the day he perfected the art. Then help came from above and he realised that the divine intervention



made him feel special and his job was less strenuous. 'When your hands are free, you have to do some action otherwise it will be boring,' says Mr. Satish. So he turned to 'Godly cycling'. Each toy makes its presence felt, he tells us. His style has earned Mr. Satish many fans: kids are always his favourites, he gives gifts whenever he meets children, '*like Santa Claus*'; besides, there are traffic police and drivers who smile at him. Some even approached him for advice on how to ride in his style whose enthusiasm he calmly discourages.

His style, apart from rousing curiosity, had led to bewilderment on some occasions in the Institute that breathes simplicity. Most trouble came from security officers who objected to anything that was new. The first suspicion was that he was promoting Hinduism, to which he promptly responded

by putting a sticker of Lord Jesus. At other times, they tried to stop him from posing like Hanuman, and later requested him to not adopt the *Namaste* posture. Then they questioned why he put 'keychains and other antique things' on his bicycle. Once he was summoned to the Security Office. Sensing trouble, he went to meet the security officer, who narrated to him a story of a former student who used to come every day in Krishna's attire. He was sent out of the institute. Then he told the officer his story and about the divine power that had entered him. Though the officer refused to believe this, he studied Mr. Satish's palm after which he is said to have told, 'Yes'. Many times people act intentionally stupid. He was deliberately hit on the road by cars ('... *those were boozed guys*'). Once somebody had removed all the keychains that adorned his bicycle. Yet he takes all these





in his stride and looks for new ways to please people and make them smile. ‘While I am doing this—people see I am doing only *Namaste*, but I actually pray to God and go, so that all obstacles are cleared’.

Nothing has come easily in his life; even the light-heartedness with which he greets people and spreads joy barely tells us about the hardships he had been through. Mr. Satish was a bright student at school and college where he studied B.Sc. in PCMB and later completed an M.Sc. in mathematics. However, his father had retired from the telephone industry when he passed SSLC, so he had to look for a job immediately after graduating. His elder brother was mentally handicapped. The atmosphere at home was grave, his parents had refused to buy him a bicycle fearing he would meet with an accident, considering their elder son’s condition. His brother passed away in 2007. Today, Mr. Satish lives with his mother who is quietly pleased when he shows her photographs and TV programmes covering his cycling campaign. He had also been in love with

a girl at whose house he had been a tenant. For all his sincerity, her father refused to give her hand in marriage as he is not a Tamilian (Mr. Satish is a Malayali). He muses about himself and the present when everything just seems alright, *‘My life had been full of difficulties, even now I am walking on thorns, only that I am safe. I don’t know why God is testing me so much.’*

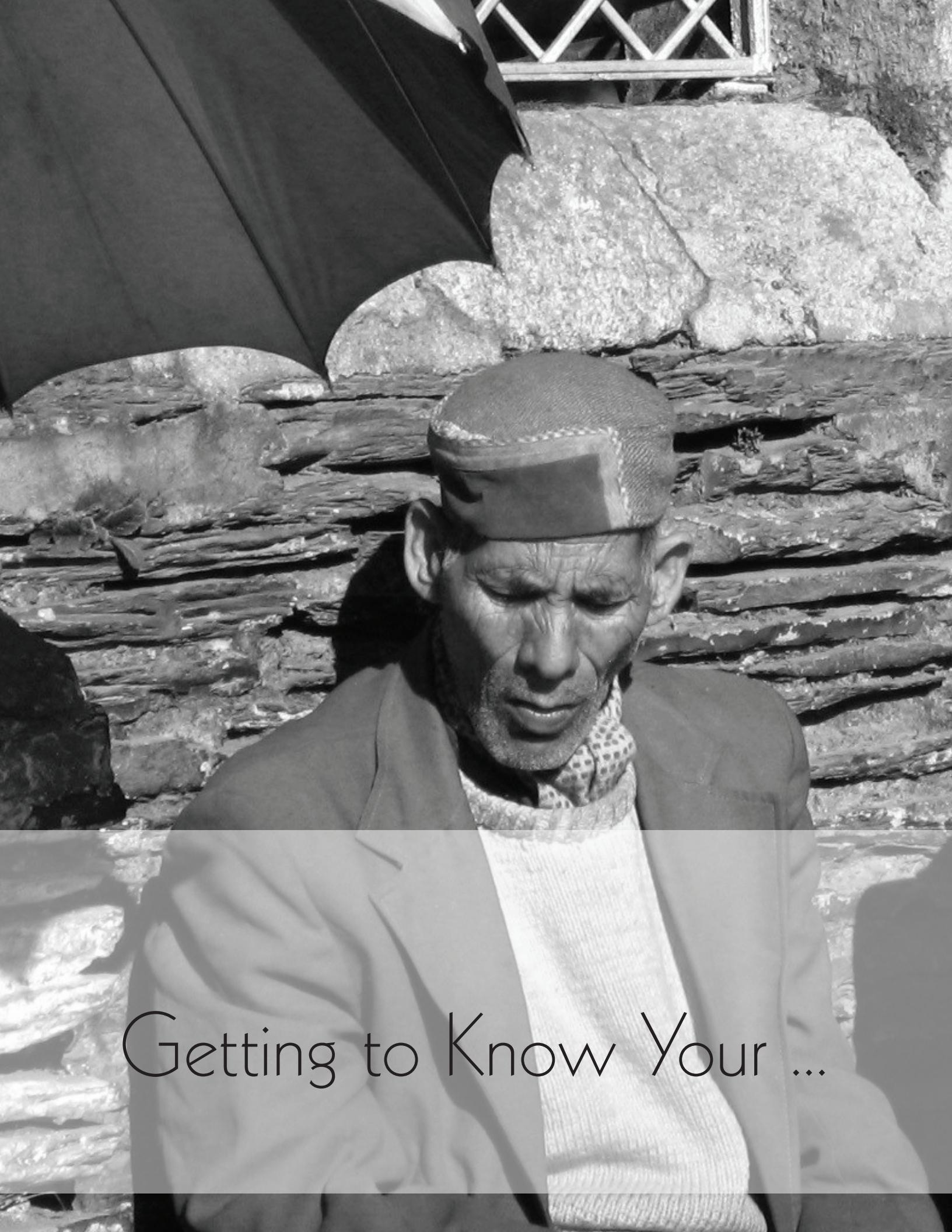
Then upon our request he came out to pose for photographs with his bicycle. We couldn’t see him in his full attire in which we spotted him first but with just a cowboy hat and white shades, a simple Mr. Satish miraculously turned into a superhero he dreams of becoming. An excited Suhas takes him for a ride before his office where our hero displayed his feats (handsfree, of course) before he carefully dismounted his bike. As is his wont he presented us with beautiful keychains as a token of remembrance. Souvenirs in our hands and a heart-warming story in our minds, the day was made!

“

My life had been full of difficulties, even now I am walking on thorns, only that I am safe. I don't know why God is testing me so much.

”





Getting to Know Your ...



Aam Aadmi

Before coming to IISc, I considered Maggi making an art; an art that involves leftovers in the larder and incorporates each and every flavour in the gastronomic adventure inside the microwave resulting in a delicious bowl of hot, steaming Maggi. After ten days in IISc, I discovered that my mug is capable of making Maggi, although not anything gourmet; one just has to pour hot, boiling water over crushed Maggi and wait for some time.

And one month in, I realized that the ever enterprising species I am a member of, has already invented such a marvel known as mug noodles which has compressed all the sweaty procedures I had to undertake in the kitchen oblivious to my mother, to a mug and some hot water.

And two months in, I find myself to be a regular explorer in the general stores in E Block, mostly for noodles-shopping. In an institute which is cut-off from the rest of the world, the general stores became representative of the shops, markets, haggling, bazaar lists, monthly rates and other mundane, familiar, semi-urban, middle class constructs to me. The all-too-familiar chips racks, shelves, glass-walled racks kept on the floor for the customers to see what's inside but only accessible to the shopkeeper, the corner for sanitary and cosmetic items, sachets of shampoo hanging from above—like a shop straight out of a semi-urban market place from back home.

The shopkeeper, Mahesh Singh, has been in charge of this shop for more than three years now. He works in the shop which actually belongs to one of his cousins, who had the shop for many years before. Mahesh used to work in a travel agency before he started working in IISc. With the intention of writing a story for Quarks; when we went to the General store, Mahesh was all too willing to share his story. Three years in IISc hasn't given him any reason to worry in the campus: 'All the students are well-behaved,' he says. He attends many of the music concerts and other events which are quite regularly held in IISc. When we mentioned Pravega, he said

that he attended some of the programmes.

As we ask him questions, customers keep coming into the store.

'Snacks sell the best,' he quips in as he gives the customer packets of cake sandwich.

With so many titbits available in the shop and considering the insatiable gastronomic hunger one feels when in lab, we are not at all surprised. The most difficult thing in running a shop is spending the long hours of free time in between. 'Sometimes 15 people come at the same time and sometimes there is no one in 3 hours. I play games on my phone or play music in the free time.'

'What kind of music do you listen to?'

'Kannada mostly, sometimes Hindi. Also, at times when I am biking I prefer to listen to Rock Music.'

'Oh you love biking, is it?'

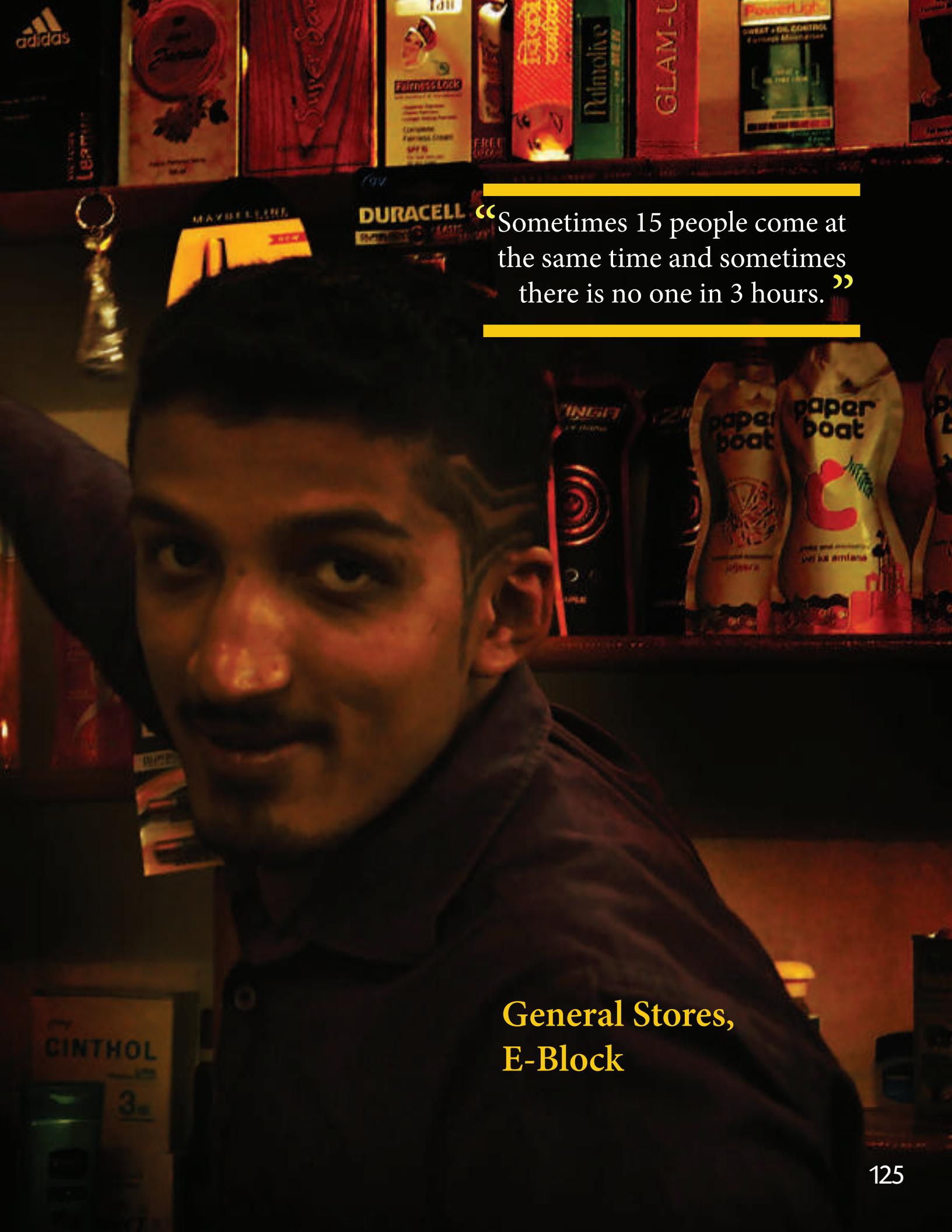
I had seen the guy on his trendy bike outside the shop many times.

'My hobby is biking! We sometimes go for all-nighters, long drives on Mysore Road and other places outside Bangalore ... I generally go out with two other friends ... once we were participating in an adventure sport when we almost died!'

'What happened? Accident?'

'Sort of. We were supposed to cross a raging creek and come back on the same bank. But, on the way back, the water level rose so much that we almost drowned! And then the locals saved us. But we never stopped going out after that!'

And then, like always, I ask him if he has mug noodles. Smiling widely, he tells me he does. And, like always, I take out my wallet.



DURACELL

“Sometimes 15 people come at
the same time and sometimes
there is no one in 3 hours.”

General Stores,
E-Block



Pharmacy, E-Block

I was apprehensive as we entered, my friend and I, carefully deciding on the questions we were going to ask the pharmacy uncle—he ought to be busy doling out medicine to sick chaps. Thankfully he wasn't and

welcomed us with a brisk nod, his way of asking us what we wanted. We explained to him the purpose of our visit and he nobly consented to the interview. Unaccustomed as I was, to this sort of thing, it took me a few minutes to get the recorder on, as he watched on, slightly amused.

The shop is small and one can find all the paraphernalia associated with a pharmacy including the soaps, shampoos, toothpaste, jars of Horlicks and the quintessential candy box with Dairy Milk. I even found tea-flavored toothpaste there once. Mr. Ashok Kumar told us that 95% of the medicines that students come asking for were available there, beaming with pride. If something was not available at the shop, he made sure he got it from his shop in Yeshwantpur which was thirty five years old. It's a family business, he tells me with a smile. He has run the pharmacy in IISc for nearly five years.

The shop seems to be mostly open even when the rest of the shops in E-block are closed, a welcome sight on the lonely road at night. So we ask him when he starts work and goes home on an average day. He tells us he has a nine-to-nine workday after which he goes home to Mathikere. His wife can also be found in the shop at times. In his free time, which he hardly has, he tells us he watches movies—Tamil, Telugu, and Kannada. Happy at having found a Tamil-speaking person like myself, I ask him how he knows Tamil. He proudly tells me he speaks twelve languages! We had assumed he was Kannadiga but surprised at his multilingualism, we ask him what his mother tongue is. Though he was born and brought up in Bangalore, it turns out that his mother tongue is Marathi! His favourite actor is a Kannadiga—Vishnuvardhan. When asked about his taste in music, his eyes light up and he tells us he simply loves old Hindi songs. As a parting comment we ask him how he finds IISc and he tells us he likes it better than outside, the students are extremely well-behaved and nice. Before we leave I spot big packets of milk powder in the pharmacy that I had needed for quite a while. Another relief. What would we do without nice pharmacy uncles?



ಜೆ ಚೌಡೇಶ್ವರಿ ಕಾರ್ಪೊಲಾಂಗ್

JI CHOWDISHWARI



Juice Centre

An average day in the life of a late bird who misses the early worm in IISc starts with a mandatory trip to the juice centre in the morning, where a glass of cold fresh juice awaits him. As you walk through the metalled road painted upon by the sunlight streaming through the canopy above, sleepy and hungry at the same time, you hear the most amazing whirring sound of the mixer, preparing the nectar of your choice.

However, it wasn't a hungry me in the morning who went to the juice centre to interview people there for Quarks; it was a hungry me at night.

Interviewing the people at the juice centre is a scary thought, because they rarely have an opening of even five minutes in their packed schedule. It was with a sheepish smile that I approached the lady near the cash box and told her about our endeavours and about Quarks. What followed was a five minutes-long conversation, which ended with a group of people waiting behind me in the queue, eyeing me murderously, muttering curses under their breath.

The lady, a merry and smiling Tamil woman, in her late thirties, smiled sweetly as I asked her name and about the shop.

'Maheswari,' she said.

She is from Jolarpettai, Tamil Nadu while her husband, also a Tamil, is from Bangalore. She got settled here in Mathikere after marriage. They started

the juice centre soon after that, almost eleven years ago. Most of the people in the shop are also from their family.

In the shop, which needed a band of people always at their toes, washing glasses, preparing juices and pouring them out for the customers, there were three young guys at work: Arpudakumar, Gokula and Tirupati.

Tirupati, a class 9 student from Kuppam, is working here just for the summer during his vacations. Arpudakumar, the ubiquitous presence in the juice centre, has been here only for 6 months. However, he is the person who runs the juice centre, I tell you, as he is seen there all day, making juice and giving them to the customers. Gokula, like Tirupati, is also helping his aunt during the summer, working also to support his studies. He is doing his PUC studies from Bapu College in Yeshwantpur with Physics, Chemistry and Mathematics as his subjects.

Among many other things, a particularly nice thing about JC, as people like to call it at times, is all the canine love you are showered with in front of the juice centre. A couple of dogs suddenly started barking in the middle of all this. It took a couple of volunteers to pat them and calm them down.

I went back to Maheswari, and asked her about what she does as her pastime. Deftly handling the cash and taking customers' orders, she answers: 'No free time! Always working here. And at the



end of the day, I have to do accounts and all?

'But other interests, music, movies?'

'Movies, yes. And our radio is on all the time here...'

'Favourite actor?'

'Thalaivar! Rajinikanth!'

I waited for some time as looks of exhilaration passed through the faces of the Arpuda, Gokula and Tirupati at this answer.

I was seriously running short of content for my report, so I chose the lamest question I had in my inventory,

'Which is your favourite juice?'



Yet, to my utter relief she answered it as seriously as she had answered all the previous questions,

'Musambi sells the best. But I like Butter fruit the best.'

My biggest concern before conducting this interview was that I would ask some stupid questions and thereby jeopardise my chance of getting nice

juice next time I miss breakfast in the mess. With that fear allayed, I could finally heave a sigh of relief, sip into my muskmelon juice and pet the dogs.

“ I did some of the technical drawings for the thesis of Professor T.G. Sitharam of the Civil Engineering Department.”



Campus Xerox Centre

Despite it being a rainy Saturday afternoon, we had to wade through a bunch of customers to make our presence felt at Campus Xerox.

'Xerox aa?' greets Swami, a young lad at the shop.

The splatter of rain fades and is replaced by the constant humming noise characteristic to several machines in the shop.

Printing out a manuscript for his n^{th} customer, a busy Mr. Ravichandra obliges to an interview. His group of six to seven may be as transient as time, changing once in three years, but it seemed like Mr. Ravichandra was always a part of IISc.

'Campus Xerox started in 2008,' he says.

We look around, only to see that all of them—Swami, Mahesh and Seshadri—are busy doing something. After all, Campus Xerox offers many services. And this we noticed in Mr. Ravichandra's visiting card, which he proudly handed over to us.

He goes on to add that he was into typing before Campus Xerox happened.

'In IISc?' we were curious to know.

'Yes, yes,' he says, reassuringly.

Although not a formal inhabitant of IISc, Mr.

Ravichandra had worked in the library as a trainee and did technical drawings for the students of yesteryears. What is more to say: he was the human version of AutoCAD for several professors of IISc—Professor Rajagopal and Professor Kruparam, to mention a few.

'I did some of the technical drawings for the thesis of Professor T. G. Sitharam of the Civil Engineering Department,' he says proudly.

It came as no surprise when he mentioned that it was the initiative of several professors of IISc to start Campus Xerox.

Turning the tables, he quizzes us, 'Which department are you from?'

'Undergraduate,' we say, thinking of the numerous graphs and printed tables we have taken from the shop.

Our predictions were right. When questioned about his pastime, he grins and says that he has no free time.

As Seshadri feeds a set of papers into the photocopying machine, we see that the shop awaits its busiest time of the year—the months of June and July. This was our first visit to the shop without a pen drive and the rains outside were not going to trouble us. We had no papers with ink that we were afraid of losing.



Cycle Repair Shop

'Fourteen years,' he said, with a touch of pride, clearly none the worse for his long years of work within the campus.

Muniraja's unassuming cycle stand, fitting snugly into an improvised nook at the heart of the hostel area of IISc, was for once quiet enough for us to make an entry. He was seated on his stool near the entrance, with his toolbox lying open near the assortment of cycles at the rear end of the shop, watching the thin stream of cyclists whom he sustained rolling up and down the slope in the afternoon sun, a picture of contentment.

'I live over there in Yeshwantpur,' he said, gesturing into the distance. 'I used to run a good business there, and one day the DR asked me to continue working within the campus. I shut my store and came here. There have been no complaints in all my time,' he continued, with a toothy grin.

We looked around for his assistant Mohana, himself eight years into the job, and indeed more familiar to those of us with the more standard requests of

'blow haaki' or 'brake sariyaagidiyanodi'; Muniraja, or perhaps his younger partner Nisar, would do the more heavy-duty work of repairing punctures or doing all-round servicing. 'There are always cycles to fix—I don't really have free time,' he shrugged. 'Who wants to go out of the campus? Someone outside will always say, "Come out for tea," or "Come for a smoke". Here there are no distractions. The students are very nice; they always speak to us politely.'

Nisar, who was absorbed in fitting a wheel, looked up as we approached, and his eyes glinted mischievously when we asked how long he had been here. 'Many years,' he said. 'I was ten years old and flapping around in knickers when I started working.'

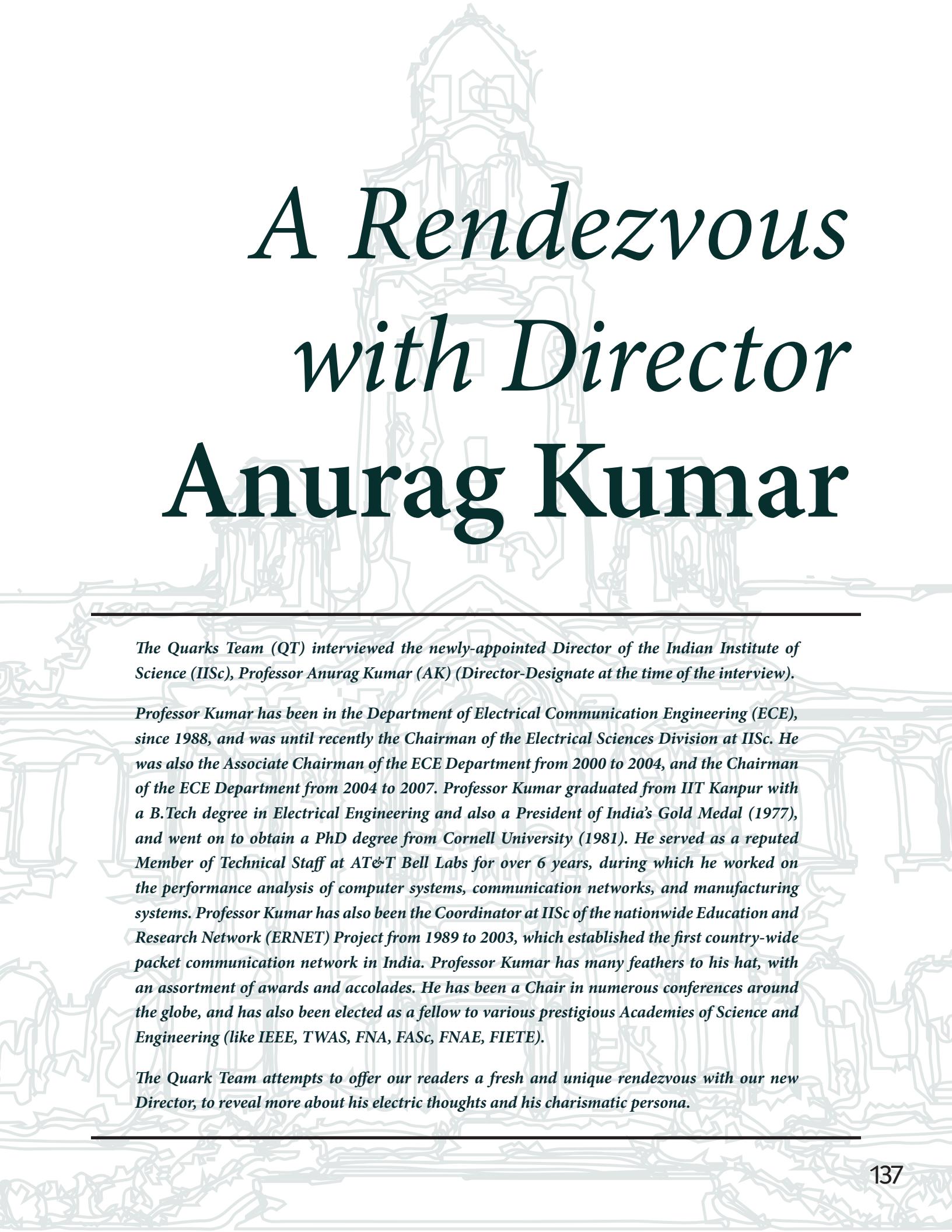
This and Muniraja's mellow, peaceful face were the images that stayed with us as we bade goodbye to the shop. Considering that our cycles had come to us as the mechanical equivalents of grumpy old men, where the precise location of all nuts, bolts and screws could be determined from the creaks and groans they emitted, our next meeting was, as always, only a few pedal-strokes away.

“There are always cycles to fix—I don't really have free time. Who wants to go out of the campus?”



In His Own Words ...

Photo Credits: Siddharth Kankaria



A Rendezvous with Director Anurag Kumar

The Quarks Team (QT) interviewed the newly-appointed Director of the Indian Institute of Science (IISc), Professor Anurag Kumar (AK) (Director-Designate at the time of the interview).

Professor Kumar has been in the Department of Electrical Communication Engineering (ECE), since 1988, and was until recently the Chairman of the Electrical Sciences Division at IISc. He was also the Associate Chairman of the ECE Department from 2000 to 2004, and the Chairman of the ECE Department from 2004 to 2007. Professor Kumar graduated from IIT Kanpur with a B.Tech degree in Electrical Engineering and also a President of India's Gold Medal (1977), and went on to obtain a PhD degree from Cornell University (1981). He served as a reputed Member of Technical Staff at AT&T Bell Labs for over 6 years, during which he worked on the performance analysis of computer systems, communication networks, and manufacturing systems. Professor Kumar has also been the Coordinator at IISc of the nationwide Education and Research Network (ERNET) Project from 1989 to 2003, which established the first country-wide packet communication network in India. Professor Kumar has many feathers to his hat, with an assortment of awards and accolades. He has been a Chair in numerous conferences around the globe, and has also been elected as a fellow to various prestigious Academies of Science and Engineering (like IEEE, TWAS, FNA, FASc, FNAE, FIETE).

The Quark Team attempts to offer our readers a fresh and unique rendezvous with our new Director, to reveal more about his electric thoughts and his charismatic persona.

QT: Good Evening Sir! We would like to begin by congratulating you on behalf of the entire IISc Undergraduate community, on being chosen as our new Director. We are extremely happy to have you as our guest today.

So, please tell us a little bit about yourself. When and how did you get interested in Science, and why did you want to pursue Science? Was there any incident in your life which made you think that you wanted to do science?

AK: First of all, on using the word ‘science’—certainly I do science, i.e., engineering science; as you know, I am basically trained as an engineer. If you look back at my life, I would say I got interested in electronics at a very early stage. It was just taking off in those days, and I remember making my first crystal radio out of a diode, a microphone, and using the stay cable of a power distribution pole as an antenna. I recall I was really interested in Physics and Maths, and I think that’s what drove me to Engineering. That was from my school days; then I took the JEE and I got into Engineering!

QT: You have been from IIT Kanpur to Cornell (University), then to Bell Labs, and back to IISc! You have experienced India, as well as America. So, according to you, how does the scientific paradigm in India rank as compared to that in the United States of America?

Do you find any difference in the way we look at Science, or the way we address issues of development in research? Do you think that there is something which is better on either side of the fence?

If you look at the teachers that I had, both in IIT Kanpur and in Cornell, I think that the quality of teachers that we have here is excellent.

AK: There are many things—I mean, my experience has been so wide over the years that In terms of the teaching—if you look at the teachers that I had, both in IIT Kanpur and in Cornell, I think that the quality of teachers that we have here is excellent. They know the subject well, and they have a good relationship with students. In the case of IIT Kanpur, the system they had in place for the students—they were given assignments, and then they were graded, and also the examination process—was very much at par with the US system. But, I think that graduate school in the US is run in an extremely rigorous fashion, in terms of expecting you to do a lot of work on your own. Right from a lot of assignments, to take-home examinations and very, very rigorous training—everything made us study our subjects much more carefully.

Also, we were open to a lot of risk-taking in our research there! That’s one thing that I found. People were investigating problems which were probably a little riskier than what we tend to

investigate here ...

QT: Riskier, as in?

AK: Riskier, as in that, at the outset, the outcome was very uncertain. In fact, if you look at my thesis, my major thesis result was a negative result, i.e. I showed that what we were hoping would be true, in fact, cannot hold under our assumptions. So, I would say, from that point of view, maybe the choice of problems that we were exposed to out there was better. People had begun to think about certain issues very long back—I was doing my PhD in the late 70s—and I sometimes hear some of those things being talked about today. So, I think that shows a very advanced attention to problems, with people looking at riskier problems—at least in the environment that I've encountered.

Then, if you go from university to, say, the industry, which I worked in—I was working in a very advanced research lab—of course, a huge difference there was that the research was driven

I don't think I would say there was any pressure as such. It's a part of the system. You come, you work hard, you perform; if you don't perform, you're out!

very much by real problems. So, that had a big influence on my thinking.

You know that Bell Labs has had a major impact on technology, whether it is communication technology, electronics technology, or optical technology. It was all driven by a need to solve a problem. In that process, they would involve anybody who would be required to address the problem. So, you would have people who are psychologists, because they were required to design good phones! Then you would have people working on optical communication, and you would have people working on economics or business, or on telecommunication and a whole range of other things.

Yes, I guess, two things that I would say are different: a lot of risk taking, and a very rigorous training of students, [since] students are not given any leeway with regards to their performance.

QT: Was it healthy pressure there?

AK: I don't think I would say there was any pressure as such. It's a part of the system. You come, you work hard, you perform; if you don't perform, you're out! So that's the way it is, out there.

I guess people who get into academia do feel that definite pressure of tenure. So that's a very important part of the system. Some people say it's positive, some people say it's negative, but overall, I find the system is able to produce very good talent because of it.

QT: But, do you feel we don't find that healthy pressure in India?

AK: There's great talent in India, there's no question of that. But, does all of it lead to good results, is the question!

QT: Sir, we feel that a lot of questions and discussions have been formulated at the interface of academia and industry. What are your views about it? Do you think there is enough work being done on the interface between these two disciplines in India, or do we still require some more efforts?

AK: Both are required! In an institution like ours, I think the emphasis has been more on the foundational aspect. Today's foundational science is transformed 20 years or 50 years later into products that come into our lives. So, there's no question about that here; you can't stop foundational science. But yes, the industry-academia interface in India is very weak, and we can talk about what to do about that later. We have been doing things in IISc and making efforts to break out of that, but they are early efforts.

QT: Sir, you have been a researcher, a teacher, and an administrator. Which role do you like the most?

AK: Oh, I think I like teaching and research the most. But, running our lives is a very important part, whether it's our personal lives or whether it's our professional lives. So, all of us do service. In fact we must do service; we are involved in our society, we are involved in committees. So, this is another aspect of running our lives, in some sense. Somebody has to run it!

QT: It is often said that in research it's not about always obtaining the right answers, but about asking the right questions. How do you think research should ideally be done? What is your approach to research or addressing a question in research?

AK: There are several ways in which you can find problems for research. One way people find problems is to look at what other people have done and they find ways to improve what others have done.

Somehow, I have taken a different approach. I try to look at quite novel problems, and I often try to drive my research by asking questions about how something can be done, i.e. some practical question; and from that practical question often an interesting theoretical question comes. I tend to work more on theory, than on experiments—although I do pursue experimental research in my lab. So, I would describe my approach to research as deriving interesting research problems from novel applications. I already mentioned another approach to getting research problems earlier, but I tend to do it this way.

QT: If you could give a piece of advice to yourself in retrospect at the age of 25, what would it be?

AK: Hmm! At the age of 25, where was I?

I was already doing my PhD. (Pause) Hmm, it's a pretty hard thing to say.

QT: So, do you mean that you are perfectly happy with the way your life has progressed?

AK: I think pretty much the decisions I have made have held me in good stead. I don't think I'd like to

change anything.

At the age of 22, I finished my B.Tech, and then I started my PhD immediately. At the age of 25, that was '79, I was already into my 3rd year of PhD. Around that time, I had some doubts about whether I should stay in Cornell, so I also sought and secured admission in Stanford, and in [UC] Berkeley. Finally, I stayed there [in Cornell], because, whatever I had started, I wanted to finish it rather than start something afresh. That was an important decision I made!

If I had made a different decision at that age of 23 or 24, I would have been a very different person. I can just say that I would have gone in a very different direction in research. So, in some sense, the decision of staying where I was and finishing what I had started has shaped me in a particular manner.

QT: Most of my colleagues, including myself, have just entered the third decade of our lives, and we have a lot of question we keep asking ourselves! We all have certain goals that we want to achieve and we also possess this notion of how our lives should turn out to be by the age of say, 25 or 30. However in reality, life turns out differently, and you never know where you may end up ...

AK: Yeah, I've had very few twists and turns in my life, I think. So, I've sort of had a very straight career.

QT: So, it was well-planned?

AK: I don't know! I came back to India and I had IIT Kanpur and IISc as two options. I chose IISc, and that was probably a big decision in terms of the way

my career has turned out.

QT: What drove you to come back to India or particularly to the Indian Institute of Science from Bell Labs?

AK: Okay, so I can try to answer both the questions.

For me the obvious reason to choose IISc was that I wanted to be closer to research. My wife is also a professional. For her, the options were better in Bangalore. She's also an engineer, and that was an important consideration. And then, the weather, and the place also mattered! Actually, that was the first time I'd come South, from the North of India. So, that was a big change for me.

I was always interested in coming back to India. I did not want to spend my life there [in America]. I never became a part of that country. I always felt that the good things I saw there, I would like to see them back in India. I wanted to contribute here.

QT: Sir, what are your views and expectations about the Undergraduate programme? What do you feel about it?

AK: Well, I think it's a very important step that we have taken. I would have to think more about it over the next few months, as I take over, and what we have to do to sustain it and make it grow. I should ask you all, how you feel about the programme and the things around it?

QT: Well, we are absolutely delighted to be here.

AK: (chuckles)

QT: Is there any message that you would like to give to the students of IISc?

AK: The most important message that I can give to the students of IISc is that you are in an excellent academic environment and that you should make the most of it. I don't think all students make enough of IISc, as they should! There are very good people to teach them, and excellently provisioned facilities—at least in terms of research. So, make the most of it!

QT: Do you have any book that you would recommend to every aspiring scientist, or every engineering student? Need not be academic!

AK: Oh, one book that I liked very much was actually written by a biologist! It was, I think, written by a British biologist—P. B. Medawar, [and titled as] "Advice To A Young Scientist". My PhD guide had advised me to read it, and I found it very interesting.

Another book I was advised to read, which I found very useful is a thin book on English mistakes that we commonly make. It's by Strunk and White. All of you should pick it up; it has a nice style of writing.

And what else? I don't know, I've read so many things; I can't point to any particular one which I'd want to recommend, but these two just come to my mind as books that at my formative stage, I found ... (Pause)

QT: Most useful!

AK: Not the most useful that I've read, but, since you asked me a question I'm giving you an answer

off the top of my head. I'm sure there are many answers to this question!

QT: Lastly, do you have any favourite pastimes that you cherish apart from work?

AK: You know, there are certain things that I enjoy doing. I used to enjoy playing tennis, I was interested in that as a sport. I like to read and I like to watch movies! I have become so busy, even in the last 4–5 years, that it's become very difficult to participate in any of these activities! So, I'm now more or less confined to my academic work, and the administrative work as a part of my recent positions!

QT: Sir, thank you very much for sparing us some of your time!

AK: Ok, all the best and do well in your studies!

(The End)



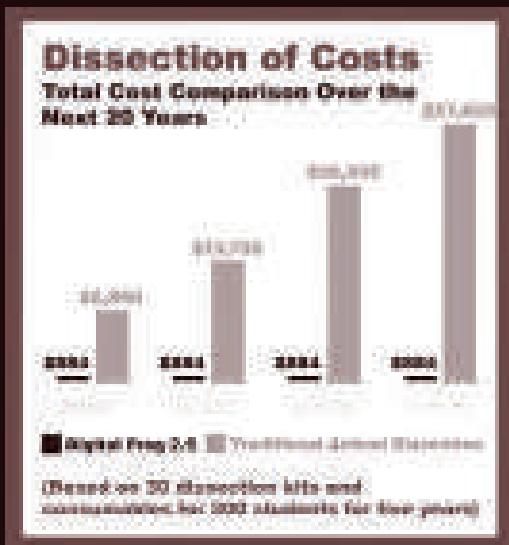
Art by
SHUBHAM MISHRA

Dissection Victims

Number of Animals Killed for Classroom Dissection Each Year

10,000,000+

"No animal from any species shall be dissected, either by teachers or students for any purpose."



As per notification No.F.14-6/2014 (CPP-II) dated July 2014, the University Grants Commission has published official recommendations calling for an end to animal dissection and experimentation (for training purposes) in university and college zoology and life sciences undergraduate and postgraduate courses.

Disclaimer: The views and opinions expressed in this article are solely those of the individual authors in their private capacity and do not in any way represent the views of Quarks or necessarily reflect Quarks' policy or position on this issue.

I AM
NOT A
TOOL,
I WAS
A LIVING
BEING.



A Necessary Evil

— Sahana D. Rao

"I profess to learn and to teach anatomy not from books but from dissections, not from tenets of Philosophers but from the fabric of nature," said William Harvey, the famous English physician who is credited with the first description of systemic circulation. The debate on animal dissection has been on in India for quite a while and the University Grants Commission (UGC), in 2012, asked schools and colleges in India to phase out animal dissection as a teaching tool and use software models instead. One has to realize that dissection of animals in schools is different from dissection of animals in colleges or for research. Dissection of animals while teaching students in professional courses is indispensable as computer models fail to simulate the complexity of living models.

In principle, dissection of animals is no different from non-vegetarianism. In both cases, we grow animals just for “sacrificing” them for human use. So, why dissection is detested and non-vegetarianism cherished, by the same people, still intrigues me. Moreover, non-vegetarianism is a choice whereas dissection in medical research helps save millions of lives, and indirectly contributes to veterinary research. Another point to note is that none of the organisms used for dissection are endangered. If this were the case,

then everybody would agree that it must be abolished. Dissection of the household cockroach or of bred mice, which are bred exclusively for dissection, will not significantly cut down the numbers of these organisms. So, the question of dissection driving these species to extinction is ruled out. An argument generally made against dissection is that the organism's life is seen as having very little or no value. This is largely untrue because there are strict regulations and guidelines issued by several ethics committees beginning from the intent of dissection to its procedure to the method of discarding the organisms' bodies.

One common suggestion given by most is for a demo of the dissection where the students passively observe. This should be implemented with discretion as some fields have more need for dissection than others. Saving dissections for the last stage of learning will not be helpful when we need trained and competent professionals. It is important to note that dissection of animals should be left as a choice and not made a compulsion.

People should think twice before taking modern medicines if they are against animal dissection.*

**This article in no way advocates testing of animals for cosmetic purposes and no animals were harmed in the making of this article.*

Sacrifice for a Greater Good

Auschwitz, Germany: The darkest places in hell are reserved for those who maintain their neutrality in times of moral crisis, or so they said. One could not reason whether her oblivion was a blessing or a curse; little did she know of what lay in store for her in the clutches of fate. After all, not until just before dawn does one sleep best. She was special, “distinguished” one could say, a freak to others, and since birth, fate had reared her simply for death, simply as fodder for the insatiable hunger of the Grim Reaper. She was “the chosen one”—chosen for her perceived stereotypical characteristics. Her crime? She was different, different from the ordinary, or more appropriately, the majority, that thronged the streets and fields. Different from the extraordinary who wielded the power over her life and possessed the authority to decree the differences between individuals.

Then again, of what value is a life? “*Life, to be sure, Is nothing much to lose, But young men think it is,*” and she was young—just another face in the crowd. No memorials would be dedicated to her to remember her ephemeral haunts on Earth; no garlands would wither on her brow, no guns would announce or commemorate her dying beats to the grave.

*What passing-bells for these who die as cattle?
No mockeries now for them; no prayers nor bells;
Nor any voice of mourning save the choirs, —*

*The shrill, demented choirs of wailing shells;
And bugles calling for them from sad shires.*

Death was to accost her in ignominy and anonymity. Her genetics dictated the presumption that she was never destined to spend much time in the realm of men. Perhaps that was the rationale with which the men (and women) could justify her obligatory demise when they struggled in vain to pacify their pricking consciences as they lay tossing on their beds at night while sleep continued to taunt them. Perhaps it was a curse to be born in the body that she evanescently occupied, a corporeal malediction she could never aspire to rise above. All that lay within the capacity of her diminutive figure was to scratch and claw at the walls of her tiny confines, albeit in ineffectuality, for when has flesh ever been a match for steel? Elusive liberty awaited her; her quivering nostrils could perceive the fresh air beyond the walls of her prison, from the vast world outside, naked in its barren infertility.

*Yet, congregated on its blankness, stood
An unintelligible multitude,
A million eyes, a million boots in line,
Without expression, waiting for a sign.
Out of the air a voice without a face
Proved by statistics that some cause was just
In tones as dry and level as the place:
No one was cheered and nothing was
discussed.*

Her confinement crippled her mentally as did physically the chemicals pulsing through her body, her veins the poisoned chalice that fed her body with the toxins devised on the pretext of clinical trials. Sure, she was the receptacle of the deleterious effects thereof, but who was she to complain? Even if she did (one never knows how she could have the audacity to) her mute protests fell on the deaf ears of the phantom listeners. The debilitating solitude left her on the verge of insanity as she could but watch as all whom she knew were taken away, one by one, never to return again. It seemed that her faceless captors understood a different language—one which not only failed to comprehend the common language of the soul that one does not live by bread alone, but also rendered one's ears impervious to the shrieks of a wailing mother, cowering in fright, when her child is carried off.

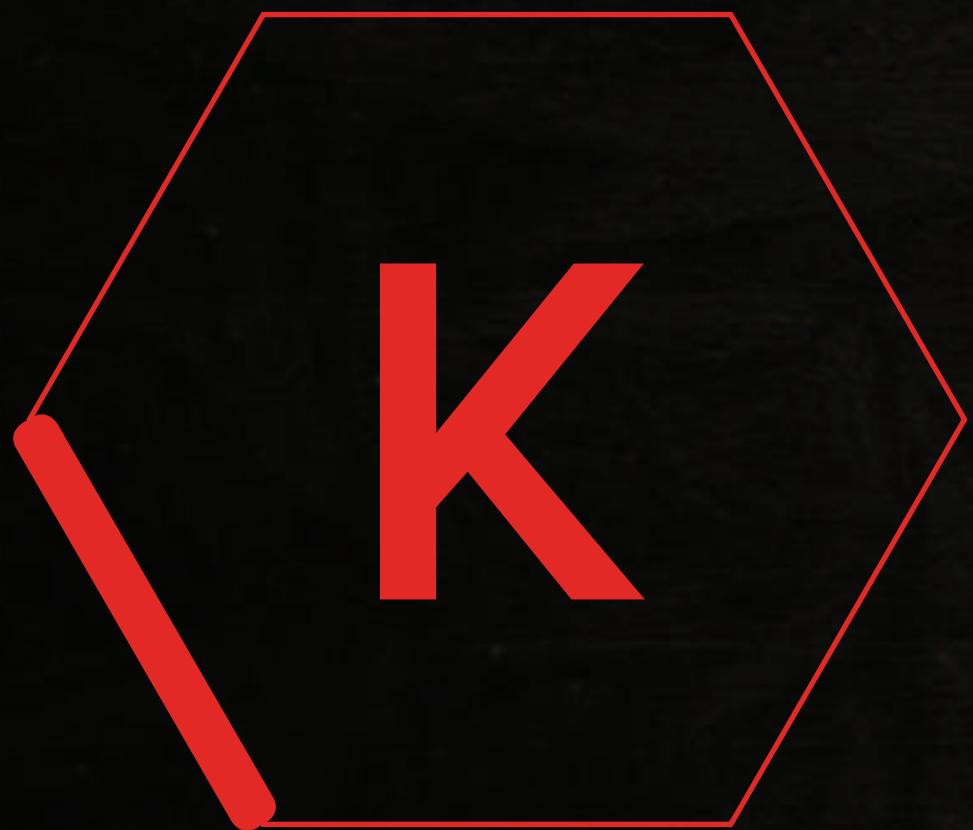
All hope abandon, ye who enter here! The final confrontation was always tragic in its sheer futility—the last struggle followed by perpetual silence. Her frantic motion about the gas chamber could have been attributed to delirium, had it not been for the serpentine streams of smoke surreptitiously saturating and suffocating the body to ensure that the banging against the walls would soon be rendered silent. The cadaver was to be desecrated and disposed off, nameless and deprived of the last vestiges of honour, to be feasted upon by the birds of prey, the harbingers of death who circled overhead expectantly, heralding the inevitable. Yes, she was a sacrifice, a sacrifice to strengthen another race, a mightier race. 1938. Vergesst Es Nie. Never forget.

Indian Institute of Science, Bangalore, India: 2012. 2013. The question is for how much longer? The “sacrifice” of mice in the undergraduate laboratory raises a plethora of demons that plague the mind and which are yet to be exorcised. For all the miracles of

modern medicine aside, I refrain from commenting on the ethicality of the usage of animal subjects in scientific research. However, quoting a petition by PETA, “despite the fact that in 2012, Dr Tishya Chatterjee, then-Secretary of the Ministry of Environment and Forests (MoEF), issued a landmark directive instructing all universities and colleges that teach graduate and postgraduate life sciences courses to follow the University Grants Commission guidelines for ending animal dissection and experimentation to train students and to use humane, non-animal teaching methods instead, the University of Delhi continues to force students to dissect animals.” It seems that the Indian Institute of Science prides itself in being hand in glove with the University of Delhi in championing their common cause.

I beg to know what perverted sense of logic justifies a “sacrifice” of life, in such copious numbers, so that students (less than 20% of whom would ever pursue Biology in their lives) can merely prod and poke and peek and peer. The irony lies in the fact that the reluctant are being compelled to incarnadine their hands while simultaneously, the necessity of denial has pushed the authority to extents that even a mere mention of the number of animals allegedly “sacrificed” in one's laboratory notebook begets reprimanding. I often wonder if I am the only one to be reminded of the atrocities perpetrated by the Nazis in the name of medical experimentation. Why should humanity be reserved for human beings alone? Or is the sanctity of life to be decided simply on the basis of the body in which the life resides? ■

Rhine Samajdar



Life, Death
and
In-Between

V

- 
- 150 A Fading Lullaby
- 151 The Goddess of Small Things
- 154 The Death of Nira Rajan

A Fading Lullaby

– Nandini S.

Pouring with all its might,
A rainy night in Kerala.

In a faintly lit space,
On a wet cow dung floor,
clogs a feeble lullaby
of a mother with her newborn.

Her helpless face, dawning upon him.
Her milkless nipples, typifying
the baby's destiny, a bleak world.

Her rough hands, caresses her soul,
a dying piece of matter now.
Rubbing off tears, every time
her weary eyes gets filled,

she is afraid to live,
the unscrupulous, savaged world!

Dotting her thatched roof,
the numerous orifices,
like her life's 'empty spaces'.
Far across the moor, though
covered in utter darkness,
she saw her parched future.

They still cling to her, her dreams,
dragging her to hope.

For hope is the only attribute,
of such wretched spirits.

It never rained in her heart,
but, it was still raining, outside
though of no reason, sometimes.



The Goddess of Small Things

The *ghats* of the Ganges, littered with flowers, leaves and *ghots*, had watched in silent awe as millions came all throughout the day and immersed idols, with folded hands and guarded shoes. The latter is a mere and often futile precaution against the prowlers, who gladly pick shoes and sell them at the Chandni.

The day was long, with a number of Calcuttans trying to evade the crowd and reach as early as possible. But in a city of millions, even the meager makes a crowd. So the tussle began even before the sunrise, as the yearly almanac clearly said that the *Shukla Panchami* got over at 5 o'clock. 5:04, to be exact. No one had a clock adjusted to the chronometer, so they thronged the *ghats* with the first caw of the morning crow.

Even hours after the first immersion ceremony in the Ganges, the greater proportion of youth was clearly noticeable in the crowd. And you could easily see that most were from the *bazaar*, that is to say, not from the middle class, but from humbler backgrounds. And while most were well past their boyhood, the moniker 'Bazaar boys' stuck. Their garish dresses and brazen attitude stood out in the mellow afternoon. The somber sunset gave way to tunes of Hindi numbers, which were, more often than not, a remixed version.

Jishu had never seen or heard such a cacophony. After all, most of his pictures of life were shot through the frame of his father's shop. He took his father's chair when he left for some work, and assisted him at other times. Sometimes his friends tempted him to ride with them on the motorbike, but fleeting images of his father with a stick had had the better of him most times. But this time he made sure that his father would not decline his wish. Days of mute work, always before the call from his father and he finally gathered the courage to ask.

"Can I go to the *bisarjan*?" He had asked, softly.

"The ... what?"

"Basu was telling me that the *Saraswati Puja* is in a week's time. The colony club is planning to bring a band party for the *bisarjan* ..."

"Now, don't tell me that you"

But he did tell him. When his father's stupor over his evening alcohol was deep enough, he had also forced a yes.

And now he was here. He had a small cut in his elbow as it brushed past the projecting iron rod of the minitruck that carried the boys and the idol from Garia to the Ganges. But his pain subdued when he saw the spurt in human activities.

Some were dancing to the tune in the most haphazard manner. But even the most flamboyant steps couldn't disguise their inner conflict and all the sacrifices they had made in life. Happiness for them was measured in cups and cones—in the number of hours they spent at duty to bring enough food for the family, and maybe sometimes in the number of satisfying hours, those were spent under the bed sheet of the neighbor's wife. Some of the older and the more dignified lot looked in disgust at the younger ones. Some even mourned how solemn the celebration of this day in their childhood days was. Much of those descriptions were crafted instantaneously; was there also a bit of envy in their disgust, Jishu thought.

"Hey, we did not bring you here to just gaze like a *thundtho Jagannath*—a standstill idol. Help us to carry the idol. God is she heavy!" Basu called, bringing Jishu back to reality.

He scrambled towards them. The cemented stairs were muddy and slippery, making it all the more difficult for Jishu to move. But he did manage to put a hand below the heavy idol.

Where the ebbed water of the Ganges met the man-made bank, men, women and young adults gathered and immersed their idols. The air was heavy with chants from the priests, who lifted their *dhoti* up to their knees and carefully preserved their sanctity.

"*Om bhadra kalyay namonityang, Saraswatyei namo namo*

Veda Vedanga Vedanta Bidyasthaneyva ebo cha."

Flowers flew. And in went the Devi.

Jishu did not know the meaning of the mantra. Neither did he understand why many children were collecting the used flowers and touching them on the forehead, before putting them inside their pockets. He was also curious to know why many

had brought books along with them.

Books. Those were something he rarely saw. His father's was a grocery shop, where you would find a place for cheap pirated DVDs, but surely not a book. He remembered those days when his mother would bring him second-hand books at the beginning of the academic year at school. Adarsha Vidya Niketan for the Underprivileged, its name was. But the little privilege of studying also vanished the day he first came here, at the bank of the Ganges. But there was no water visible then.

Only fire.

He had held a burning taper. He still remembered that someone held his hand and thrust it forward. It touched the mouth of a corpse, a body he once called mother. And then there was nothing but fire. A couple of hours later, he had himself immersed the ashes in the muddy waters of the holy river.

No, his father did not give him the news. A month later, when he went to school, he learnt that his father had not paid the token fee and had himself struck Jishu's name off the register.

He still had some books in his box, which he kept off his father's knowledge. But those were items to savor at leisure, surely not articles to bring to the *bisarjan*.

He had also noticed that many school-going boys and girls had come to their *pandal* and offered the *pushpanjali*. Some even gave the priest boxes of sweets to offer to the Goddess, so that they were endowed with knowledge and wisdom. But Jishu wondered whether the Goddess had time for school dropouts too. However, with all those school children to look after, he considered the chance slim.

Jishu and Basu and the other boys pulled up their pants and left their sandals on the stairs. Then they carried the idol into the water, revolved her three times and then laid her into the water bed.

"*Jai Saraswati, Jai Kali, Jai Shiva ...*"

Before he stayed on to utter all thirty three crore names, the others pulled Basu back.

The sacrosanct *ghat* was now full of godly wastes. With the setting sun casting the somber rays over

the river, the river carried the poisons - scientifically and literally, spiritually and metaphorically. Many castaway idols remained standing on the river mud, their arms amputated and faces discolored and dresses torn. The stench of decomposed flowers and leaves put even the street dogs off. They stayed off the mud, occasionally sniffing at something or the other.

Ganges—the holy river. The river that held all the secrets of Jishu's mother. And of many others. The river who knew about all those unnamed craftsmen who had spent days to make the idols of the *devi* for a pitiful salary. Her beautiful face, well-proportioned limbs, hourglass figure and even the *veena* she carried in her hand were made from clay taken from the riverside by them. Only to be lost in the waters of Ganges. The water, which had assumed a color of all colors.

As Jishu sat against the wind at the back of the open minitruck, he looked at the sky. The sky looked confused, whether to bid goodbye to the daylight or to welcome the darkness. Some untimely clouds seemed to take the *basanti* hue. To his eyes, the cloud took the shape of the magnificent swan, the vehicle of the Goddess. A drop of saline water appeared at the corner of his eyes.

Among the books that his mother had left him, there was a translated book, about a girl and a cat with a funny name. And the girl fell through a hole and had all kinds of adventures. Jishu still loved to smile, if not laugh at those absolutely impossible events. He always had to find new excuses to please his father and give a plausible reason behind his sudden fits of laughter; but those were happy moments.

Now, with the sky finally accepting the dark, Jishu pondered over the reason behind the sudden tears. Was it for the inherent tone of loss associated with *bisarjan*, or was it a mere reminiscence of his mother? Or probably a growing envy towards all those who were looking forward to another academic year? Those who were now returning home with their parents, their hearts filled with pleasant anticipation.

No, Jishu did not get the answer.

Probably the Goddess of knowledge had been a little miserly to him. ■

Subhayan Sahu



The Death of Nira Rajan

Jadeera Aboobaker

*In loving memory of
Nira Rajan*

*You came with the morning breeze amidst us
Spreading with your cheerful smile, joy and happiness
But before the evening faded, you went away.
The world, without you, is a lesser place today
We will miss you forever.*

I read the obituary and laughed. Not that Nira Rajan's death was funny. Far from it. I laughed at the irony of the words, and I will tell you why I felt that way.

First, I will tell you about Nira Rajan.

Nira was a popular girl. I liked her for her cheerful personality though she was no close friend of mine. I thought that my friendship would be useless as she was always surrounded by tons of friends. So we just waved, smiled, said hellos and that's it. She was a rich spoilt girl. She had no lack of money and she was lavish with her friends. I sometimes felt that most of her friends were there because of her money rather than because of her personality. She was my classmate and my next door neighbor in hostel. Though her home was near, just a bus ride away, she preferred to live in the hostel. Her roommate was Ruby. They were always fighting, but then it was not much of a problem because Ruby was away most of the time. Her grandparents' house was nearby and she stayed there often. So Nira had the room to herself frequently, which created trouble when Ruby returned. Nira would have stuck up funky posters and splashed colors all around, something that Ruby detested. So Ruby would go back to her grandparents'. You see, it worked as a cycle; Nira did it because Ruby was not there and Ruby would not be there because Nira did it!

Now I will tell you about one rainy day.

It had been raining heavily for a week, so heavily that class had been called off for four or five days as most of the day scholars couldn't come. It was getting dreadful. I had nothing to do. Most of the girls were sitting in the TV room and watching movie after movie. I was lying on the bed and listening to the soft splatter of water on the windows. It was about two

in the afternoon. Nira had also been in her room all day. It was unlike her. She would always be found in the midst of a gang of girls; not alone in her room. As there was nothing else to do, I got up from my bed and went to her room. I paused in front of the door, hesitating to knock. She obviously didn't need my company. I wondered if I should disturb her. Maybe she was studying or something ... I stood in front of her door and debated for some time. Then I returned back to my room and continued with my previous business. The sound of rain lulled me to sleep. I woke up hearing a commotion. Someone was banging on a door. I opened mine and peeped out. Alla was hammering down Nira's door.

"What's the matter, Alla?"

"I have been knocking for such a long time. She's not opening ..."

I called out her name. No one responded. Someone from the next room suggested Alla to go to the backyard and peep through Nira's window. She ran to the backyard. We heard Alla screaming; she returned back shivering and shaking her head, saying 'No, no, no ...' Preetha, Alla's roommate, volunteered to go and check. After sometime, we heard her yell from the backyard, "Oh, my God. Nira. Hung ..."

Preetha came back with strange news. I was dazed and in shock. Everything else was in huge disarray from then on. Someone called the wardens. Someone called the police. We didn't know what happened afterwards as we were sent to the common room. We were questioned and then most of us were sent

back home. I remember going on the bus with my sister, dazed, watching the night sky through the iron-barred windows of the bus. The police informed us later that there was a single note which said, "I can't bear the sadness any longer" on her desk, written in her large beautiful handwriting. Next day, the newspapers came out speaking of a suicide in our college.

Then everything else came out too. I understood from different friends that she was an orphan in her house. Her father had died when she was very young and her mother had remarried. Her family didn't care much about her. It had been weeks since anyone from her home had called. She had stayed in the hostel because she was always unwelcome in her home. The only thing her family gave her was money.

The reason why no one knew her pain was because she had only told parts of her life to everyone. No one knew her fully. Someone had to gather all the pieces and fit it together to know her real story. She had hid so well behind her mask. So well, that her suicide came as a shock. Not a soul knew what she went through.

And I could never wash off the guilt from my soul. The autopsy report said that she had died between two-thirty and three o'clock. Maybe she wouldn't have died if I had talked with her that day. If we had shared our feelings ... Oh, why did I pause that day? Why did I pause in front of her door? I wish that I could go back in time and knock on her door again. Knock on her door at two in the afternoon on that rainy day.

I can't forget it. I blame myself every day. I wonder why I didn't see through her mask. I was so close to her. My room was next door. Yet I was so far away. Why didn't I cross the distance?

I am telling you so that you don't make the same mistake. You wouldn't be able to bear the guilt.

I laughed to hide my guilt. If she had known that the world would be a lesser place without her, she might not have died ...

And we wouldn't have to write that obituary.

What was the use of writing it now? ■





S

Melancholia

VI

160 ————— An Old Playground

161 ————— A Bus Ride

162 ————— खामोशी

164 ————— Ghosts

165 ————— Sleep

166 ————— A Painting

An Old Playground

– Amogh Kinikar

A red swing, and yellow slides,

There lie, unused.

And under the litter there hides,

Titled pattern of different hues.

The squirrel scurries around,

Unafraid, unworried.

A wire fence guards the ground,

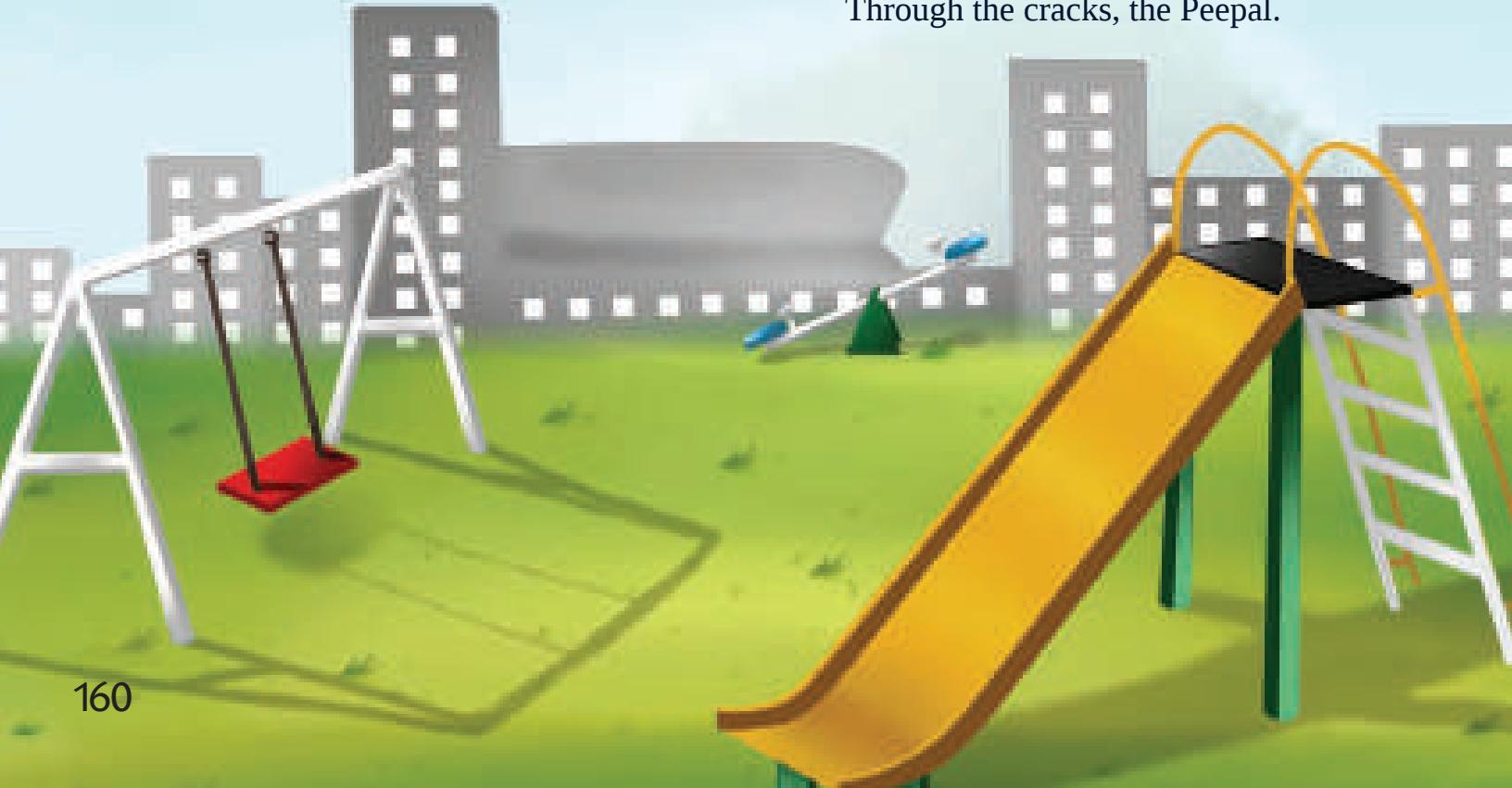
A large rusted lock; the key: lost.

The walls of peeling plaster show,

Wax crayon drawings.

On the bricks bare, lichen grow;

Through the cracks, the Peepal.



A Bus Ride

There is a bus which I ride,
I ride amidst strangers.

There is a bus which I ride,
Which I ride alone.

Standing, I gaze over shoulders
Of fellow travellers; swaying,
Their hands grabbing the holders.
Travelling, from nowhere to nowhere.

The lights are orange and bright,
Through the glowing windowpanes,
The sound and dirt fill the night,
As, alone, in this bus I ride.

The racket, the cackle, the winding turns,
The grinding screech, the thundering jerks,
And the grey sooty smell as the diesel burns.
And a fleeting faceless flock of people.

Amogh Kinikar



खासीरी

-प्रतिभा महाले

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी प्यार है,
खामोशी कभी इकरार है,
खामोशी कभी तकरार है,
खामोशी कभी ऐतबार है,
तो खामोशी कभी इंतज़ार है!

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी सम्मान है,
खामोशी कभी स्वाभिमान है,
खामोशी कभी अभिमान है,
खामोशी कभी अपमान है,
तो खामोशी कभी तूफान है!

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी लज्जा है,
खामोशी कभी क्षमा है,
खामोशी कभी ग़स्सा है,
खामोशी कभी शिक्षा है,
तो खामोशी कभी त्याग-तपस्या है!

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी विचार है,
खामोशी कभी मङ्गधार है,
खामोशी कभी आभार है,
खामोशी कभी व्यंग्य की धार है,
तो खामोशी कभी अत्याचार है!

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी अपनापन है,
खामोशी कभी अकेलापन है,
खामोशी कभी मनभावन है,
खामोशी कभी भरा-धन है,
तो खामोशी कभी खोखला वन है!

खामोशी के अनेक रंग,
खामोशी के अनेक ढंग!

खामोशी कभी चाही है,
खामोशी कभी बहाई है,
कभी मजबूरी उसे लाई है,
तो कभी वो बिन बुलाए ही आई है,

पर फिर भी खामोशी के अनेक रंग
खामोशी के अनेक ढंग!

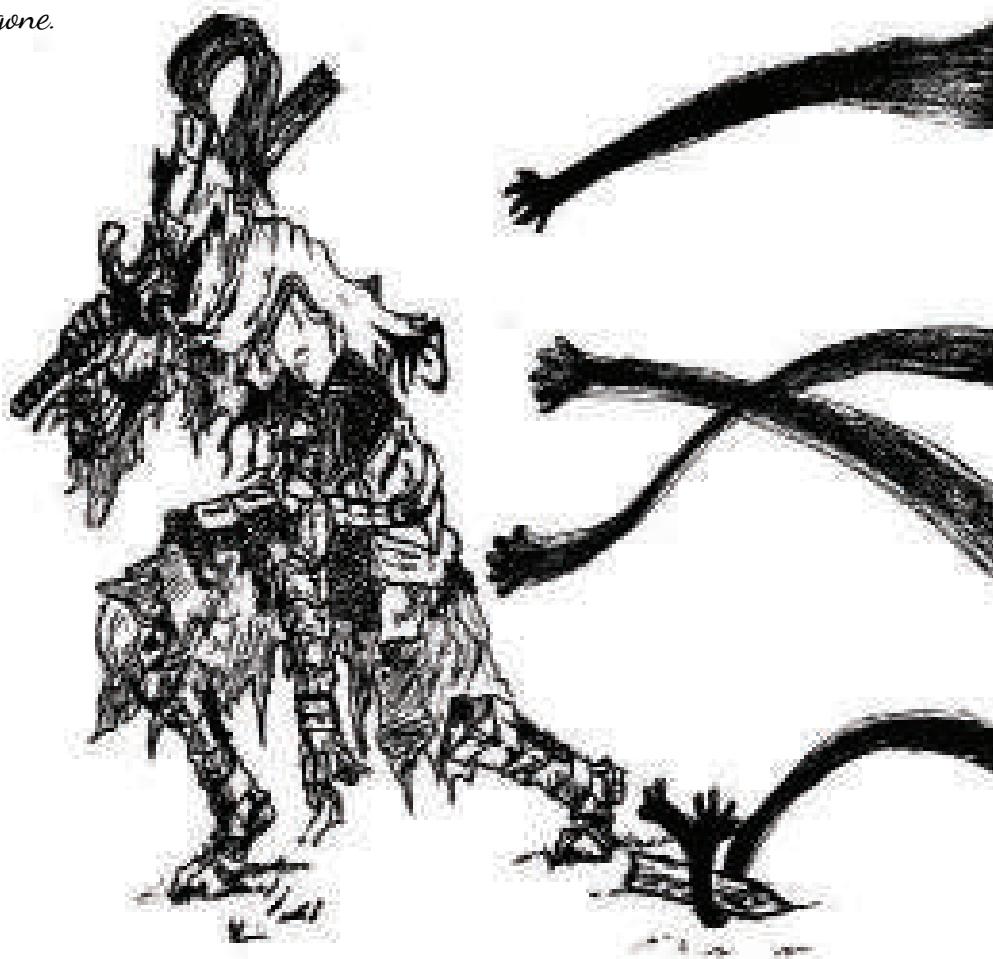
Phantom forms of loathsome light.
No exorcism, no pill to drive them by.
Haunted by day, tormented by night.
The wailing ghosts, who ask: Why?

Not dead souls these be.
No vengeance-seeking sprite.
My dead dreams, haunt me now.
Haunt me by day and by night.

Cherished dreams, friends of yore
Now seem colourless, bygone
Peripheral, an exhausting woe,
Perhaps childish, forgotten, forgone.

Ghosts

– Amogh Kinikar

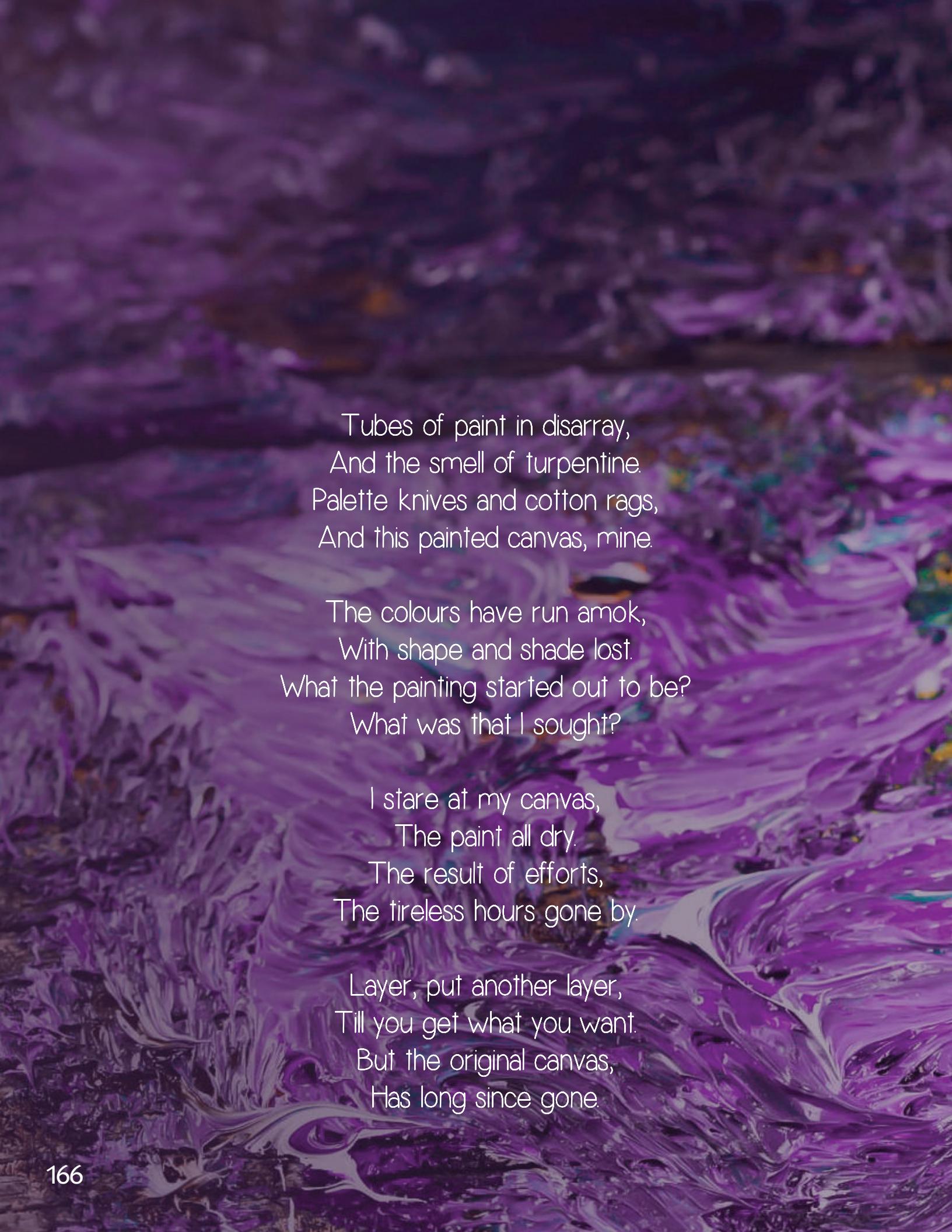


Sleep

Amogh Kinikar

*There goes my sleep,
There! Look, it flies,
It floats, away, away!
The dryness of my eyes,
As I realise every blink
I take. Without pause,
I count sheep.
I sit and toss
Aimlessly a coin;
There is no need,
To give chase.
There is no reason,
Why in every case
Sleep deserts me.*





Tubes of paint in disarray,
And the smell of turpentine.
Palette knives and cotton rags,
And this painted canvas, mine.

The colours have run amok,
With shape and shade lost.
What the painting started out to be?
What was that I sought?

I stare at my canvas,
The paint all dry.
The result of efforts,
The tireless hours gone by.

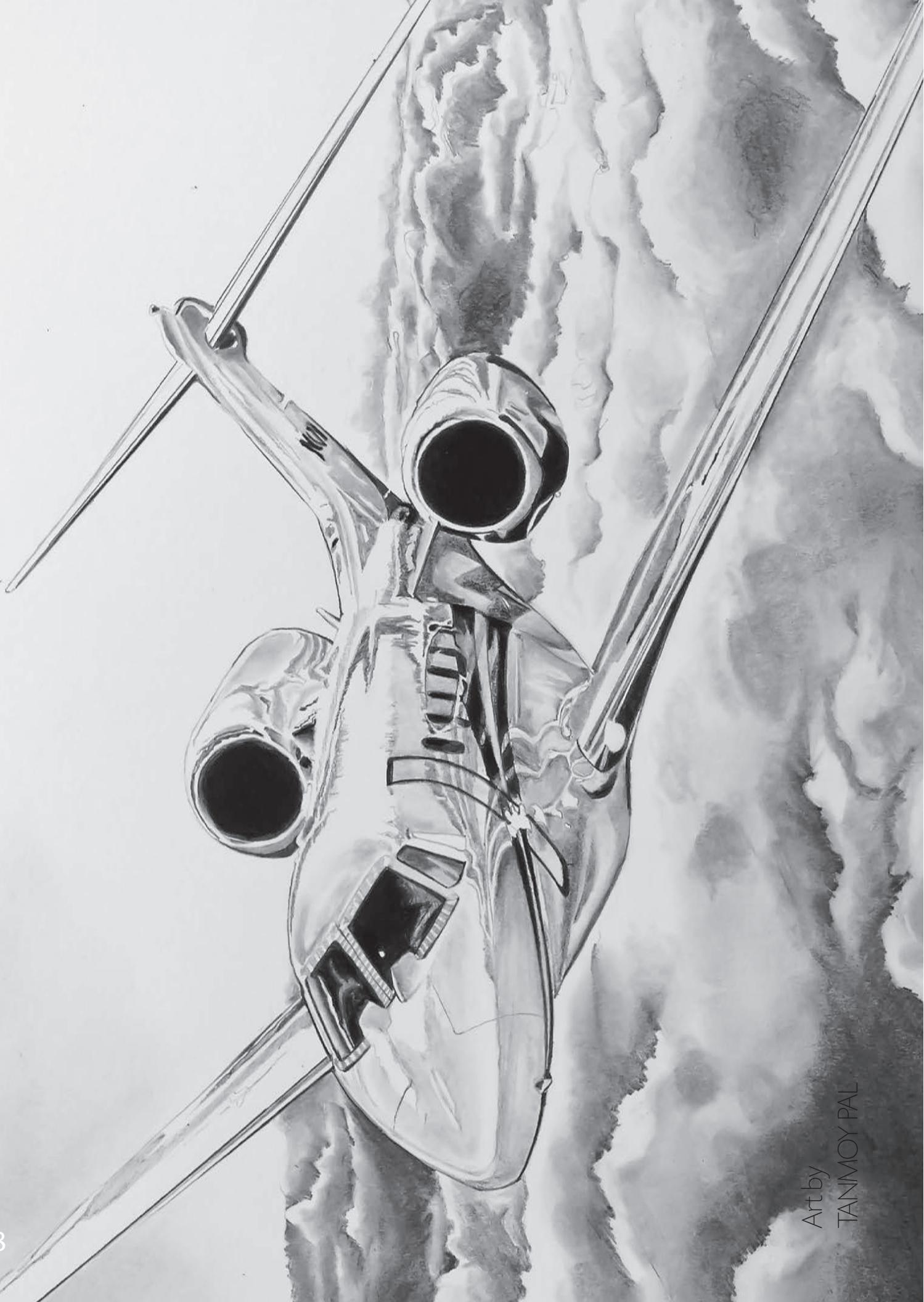
Layer, put another layer,
Till you get what you want.
But the original canvas,
Has long since gone.

A Painting

Amogh Kinikar



Art by
TANMOY PAL







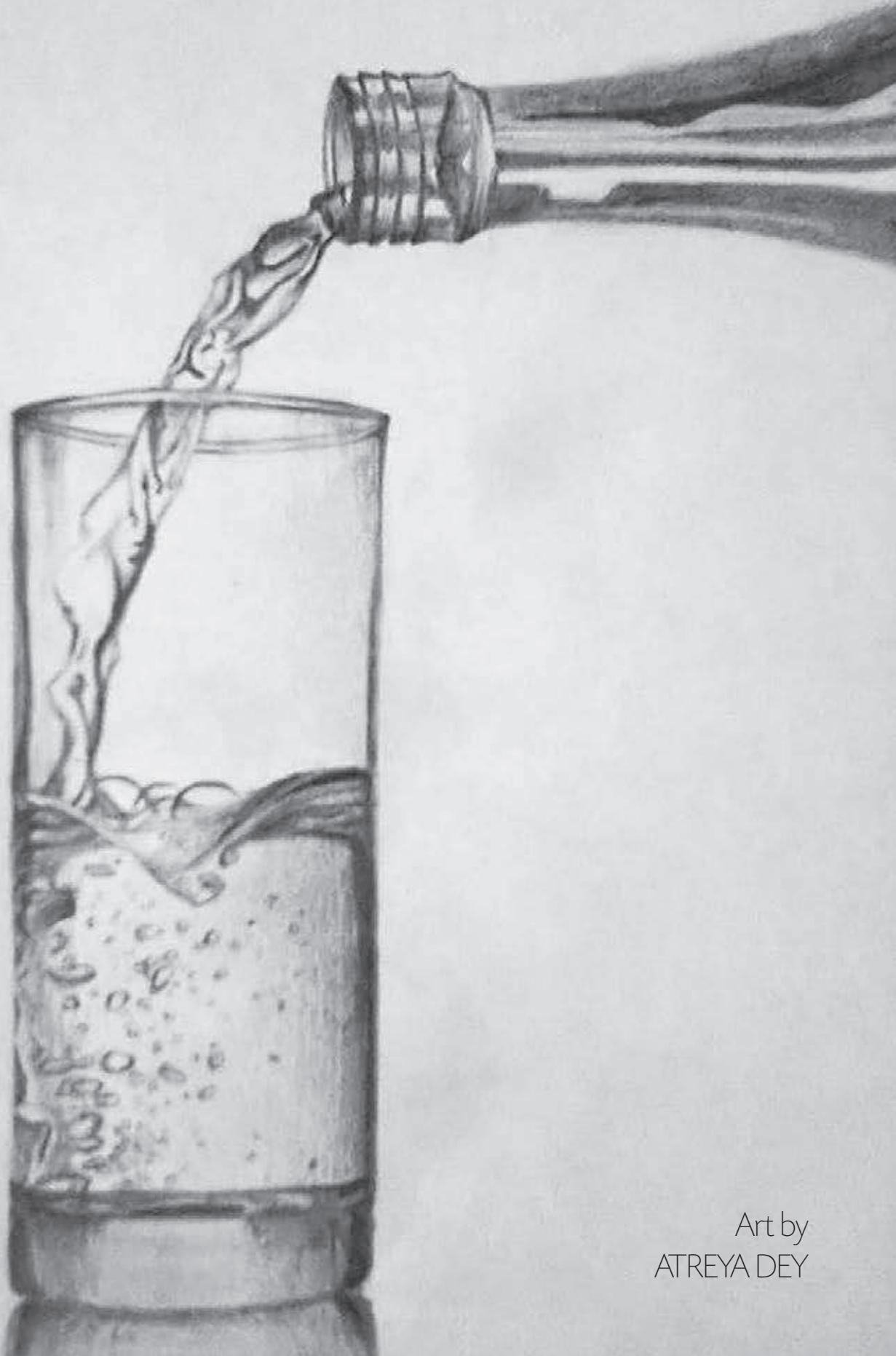
Art by
RICHANA JAIN



Mudra
ANUVA AISHWARYA

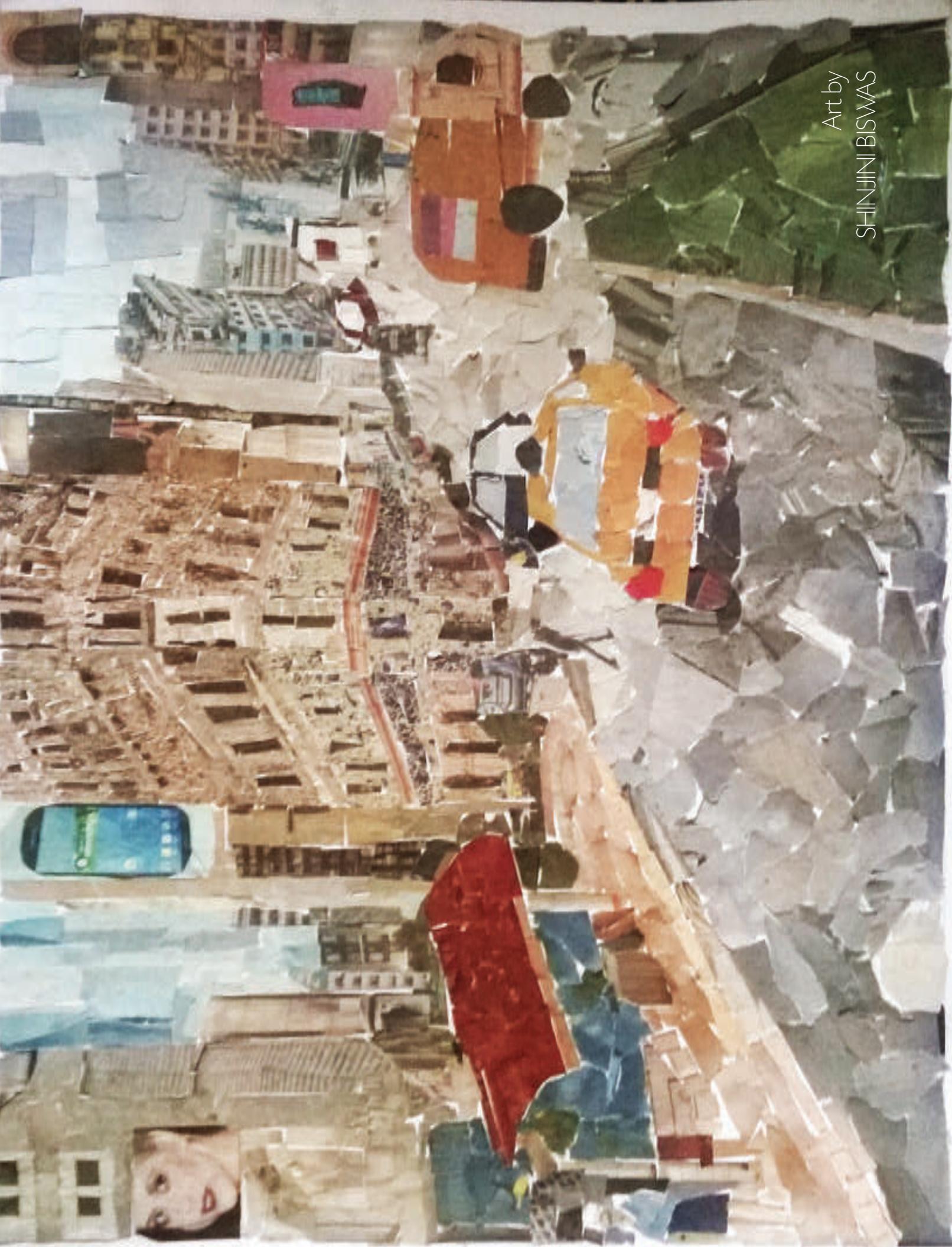


Art by
VRUJEN ANDHARE



Art by
ATREYA DEY

Art by
SHIJINI BISWAS





Rain
ANUVA AISHWARYA



Art by
ANJALI PARASTE



UTKARSH VIJAY



The one who doesn't follow the crowd is more likely to find himself in the places no one has ever been.!

VAMSI KRISHNA K.V.



If we had a keen vision and feeling of all ordinary human life, it would be like hearing the grass grow and the squirrel's heart beat, and we should die of that roar which lies on the other side of silence

VAMSI KRISHNA K.V.



The Big Thirst
UTKARSH VIJAY

Felicity
ABHINAV MAURYA





Those who bring sunshine into the lives of others
cannot keep it from themselves
UTKARSH VIJAY



I am enjoying the Morning Dew!

DR. T. SRINATH



True love is rare, and it's the only
thing that gives life real meaning
MUKUND SEETHAMRAJU



Splash!

ANUVA AISHWARYA



Eusociality
SIDDHARTH KANKARIA

It's nice to just embrace the natural beauty within you
ABHINAV MAURYA





Did you say: " Strike a pose!"

DR. T. SRINATH



Sunbathe

ANUVA AISHWARYA



Serenity

ABHINAV MAURYA



Kindles
SHASHANK H.R.



A tribute to Beauty
UTKARSH VIJAY

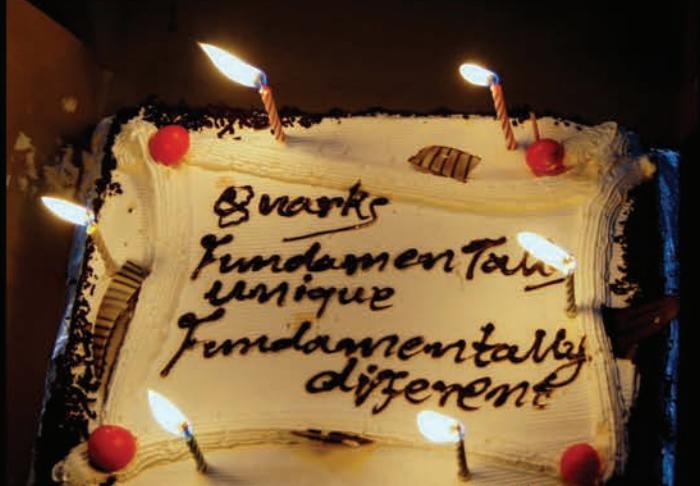
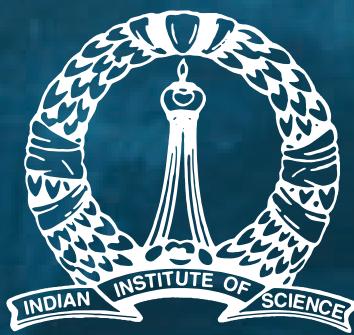


Photo Credits: Abhinav Jain, Mukund Seethamraju and Siddharth Kankaria



QUARKS

Fundamentally Unique, Fundamentally Different

Volume 3 | August, 2014